EDUCATION AND NEW DEVELOPMENTS

2018

Edited by
Mafalda Carmo

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BRIEF CONTENTS

FOREWORD

This book contains a compilation of papers presented at the International Conference on Education and New Developments (END 2018), organized by the World Institute for Advanced Research and Science (WIARS).

Education, in our contemporary world, is a right since we are born. Every experience has a formative effect on the constitution of the human being, in the way one thinks, feels and acts. One of the most important contributions resides in what and how we learn through the improvement of educational processes, both in formal and informal settings. The International Conference seeks to provide some answers and explore the processes, actions, challenges and outcomes of learning, teaching and human development. The goal is to offer a worldwide connection between teachers, students, researchers and lecturers, from a wide range of academic fields, interested in exploring and giving their contribution in educational issues. We take pride in having been able to connect and bring together academics, scholars, practitioners and others interested in a field that is fertile in new perspectives, ideas and knowledge.

We counted on an extensive variety of contributors and presenters, which can supplement our view of the human essence and behavior, showing the impact of their different personal, academic and cultural experiences. This is, certainly, one of the reasons we have many nationalities and cultures represented, inspiring multi-disciplinary collaborative links, fomenting intellectual encounter and development.

END 2018 received 624 submissions, from more than 50 different countries, reviewed by a double-blind process. Submissions were prepared to take form of Oral Presentations, Posters, Virtual Presentations and Workshops. The conference accepted for presentation 168 submissions (27% acceptance rate). The conference also includes two keynote presentations from internationally distinguished researchers, Prof. Dr. Zoltán Rónay (Ph.D, Associate Professor) Research Group for Higher Education and Innovation, Institute of Education, Faculty of Education and Psychology, Eötvös Loránd University, Hungary, and Prof. Dr. Gyöngyi Bujdosó (PhD, Senior lecturer) Faculty of Informatics, University of Debrecen, Hungary, to whom we express our most gratitude.

This conference addressed different categories inside the Education area and papers are expected to fit broadly into one of the named themes and sub-themes. To develop the conference program, we have chosen four main broad-ranging categories, which also covers different interest areas:

> • In **TEACHERS AND STUDENTS**: Teachers and Staff training and education; Educational quality and standards; *Curriculum* and Pedagogy; Vocational education and Counseling; Ubiquitous and lifelong learning; Training programs and professional guidance; Teaching and learning relationship; Student affairs (learning, experiences and diversity; Extra-curricular activities; Assessment and measurements in Education.

> • In **PROJECTS AND TRENDS**: Pedagogic innovations; Challenges and transformations in Education; Technology in teaching and learning; Distance Education and eLearning; Global and sustainable developments for Education; New learning and teaching models; Multicultural and (inter)cultural communications; Inclusive and Special Education; Rural and indigenous Education; Educational projects.

> • In **TEACHING AND LEARNING**: Critical Thinking; Educational foundations; Research and development methodologies; Early childhood and Primary Education; Secondary Education; Higher Education; Science and technology Education; Literacy, languages and Linguistics (TESL/TEFL); Health Education; Religious Education; Sports Education.

> • In **ORGANIZATIONAL ISSUES**: Educational policy and leadership; Human Resources development; Educational environment; Business, Administration, and Management in Education; Economics in Education; Institutional accreditations and rankings; International Education and Exchange programs; Equity, social justice and social change; Ethics and values; Organizational learning and change, Corporate Education.

This book contains the results of the research and developments conducted by authors who focused on what they are passionate about: to promote growth in research methods intimately related to teaching, learning and applications in Education nowadays. It includes an extensive variety of contributors and presenters, who will extend our view in exploring and giving their contribution in educational issues, by sharing with us their different personal, academic and cultural experiences.

We would like to express thanks to all the authors and participants, the members of the academic scientific committee, and of course, to our organizing and administration team for making and putting this conference together.

Hoping to continue the collaboration in the future.

Respectfully,

Mafalda Carmo
World Institute for Advanced Research and Science (WIARS), Portugal
Conference and Program Chair

Budapest, Hungary, 23 - 25 June, 2018

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"RESPECT FOR HUMAN DIGNITY: AS A FRAMEWORK AND SUBJECT OF EDUCATION IN THE LIGHT OF PRESENT CHALLENGES"

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Abstract

Near the third decade of 21st century, we must face many challenges, which affect our everyday life. Some of them belong to the technological development, and others are in relation to social and natural demands. Among them, such phenomena also appear, which are well-known in the school system, but their appearance transforms resulting from the aforementioned challenges. In the first case, digitalisation can be mentioned, which can be both a blessing and a curse: it promotes the education but can endanger the human relationships through isolation, and mobbing, bullying. In the second case, it is reasonable to talk about migration, including developing the aptitude to recognize real and false dangers; facilitating the social integration of the disadvantaged migrant children (and their family) in the school, the tools which can help them, and also the inclusive community. The third case includes the problem of both aggression and black pedagogy. Aggression is not a new phenomenon, but with the help of digitalisation, it can appear in new forms. Digitalisation makes the way of mobbing and bullying easier not just within the school, but for strangers out of school. Moreover, migrant children can be a new target for these actions. Finally about an old pedagogical problem: the phenomenon of so-called black pedagogy is connecting either to the assessment or disciplining in school.

If these symptoms affect either directly or indirectly the life of any child, the school must handle them. Many of the researchers investigate the phenomena mentioned above from the education science's point of view. Many of the researchers develop pedagogical tools to answer to these challenges. The presentation offers a new perspective. It gives an overview of this topic, presenting (the respect for) human dignity on the one hand as a framework in education and as the subject of teaching on the other hand. Human dignity as a framework is especially relevant to interpersonal relations within the school, but it is also important as a subject of teaching and education. Namely, it is necessary to teach the student to be an empowered citizen, to own the ability of legal knowledge and to respect the rights of others. But to secure it, it is essential to prepare the future teachers to know their rights and the barriers. The presentation proposes a method, which will be applied from next semester for the teachers training programme at Eötvös Loránd University.

Keywords: Fundamental rights, aggression in school, black pedagogy, digitalisation, social integration.

Biography

Zoltán Rónay was born in 1976 in Budapest, Hungary. He graduated in 1999 as a lawyer at Eötvös Loránd University Faculty of Law. He is Ph.D. on law and political sciences (University of Szeged Doctoral School of Law and Political Sciences, 2017, the title of his dissertation: *Individual and corporate liability within the governance of higher education institutions*). Before getting his master degree, he did his practise at the Department of Constitutional Affairs in the Office of the President of the Hungarian Republic.

After his studies at the university, he began to work as a junior clerk in the Rector's Office. Later he was appointed to the head of Department of Law, Administration, and Human Resources Management. At the

same time, he was working as lawyer candidate besides the distinguished Hungarian lawyer and legal lecturer, the late Daisy Kiss (Dr. Kiss Daisy Law Office). After the obligatory practical work and passing specialist examination, he became solicitor and partner of Dr. Kiss.

In 2006 he successfully applied for secretary general of Eötvös Loránd University. He was re-elected in 2011. His appointment of secretary general was recalled in 2015 when the Parliament reorganised the governing system of Hungarian state higher education institutes on government's motion. This amendment inaugurated the legal institute of the chancellor.

As an additional activity at the university, he is the university commissioner responsible for coordination of organization matters of integration between the Faculties in Szombathely and the Savaria University Centre of University of West Hungary and Eötvös Loránd University, during this project.

As a complementary activity, he is the President of Student Academic Appeals Committee. This appointment is pursuance of the work he carried on as secretary general ex officio. Except for this activity, his work in connection with the university leadership was ended in summer 2017.

In 2017 he successfully applied for a senior research fellow position at Eötvös Loránd University Faculty of Education and Psychology, Institute of Education. He joined the Research Group for Higher Education and Innovation. In the beginning of 2018, he became an associate professor at the same place.

As a university lecturer he regularly has courses in Pedagogy BA (Legal background and control of education and school; Educational governance and regulation), Educational Science MA (Education, Economy and Law; Leadership of institutions of higher education), Community Coordination BA (Foundations of Jurisprudent), Sports manager and recreation and health promoter BSc (Elementary Political Knowledge). He is a supervisor in Education Doctoral Programme. Apart from these regular courses, he has founded several optional courses: Liability of university executives; The legal and ethical frameworks of the teaching profession and Legal Frameworks of Education Research in Education Doctoral Programme. He elaborated the following courses in Human Resources BSc: Elementary knowledge about State and Law; Economic Law; Labour Law I-II.

He is a co-founder of the Education Management Specialisation of Educational Science MA. He is officially responsible for the following courses: Educational governance and regulation; Leadership of institutions of higher education; Strategic Management in Higher Education; Operation and Management of (Educational) Organisations; Internship; as well as for all the courses founded and elaborated by him.

His educational activity is not unprecedented. After his master degree, he instantly started to teach at Eötvös Loránd University. He was a part-time lecturer at Department of Civil Process Law and Department of Constitutional Law and in several programmes of the following courses: Civil process law, Civil process Law in connection with real properties at Institute for Postgraduate Legal Studies. Because of the amount of his work as secretary general, he was forced to abandon these activities. He has been committed to supporting talents. He has led a civil law course in Bibó István College since 2005. His student won 2nd prize in the 27. National Conference of Scientific Students' Associations ("OTDK") in the section of law and politics.

His scientific interest ranges over the law and legal history of education; related to this fields the labour law, administrative law and civil procedure in education. His main research field is the responsibility and liability in operation of higher education. Apart from these fields he handles the law in teacher's training and education, especially with teaching and developing legal knowledge in teachers training.

He regularly publishes. His monography (working title is Legality and Ethics during the Teacher's career) is under editing.

He is organiser and participant of several scientific sessions.

He organised the **Civil Procedure of 21st century Conference** and **The electronic payment order and the notarial function**; both for the Hungarian Lawyers' Association Section for Civil Process Law.

He gave presentations in several scientific programmes:

- **About the secretary generals** (Eötvös Loránd University Faculty of Education and Psychology, Higher Education Management Workshop) – English title of presentation: *The role of secretary general in the leadership of higher education institutes*;
- **Autonomy in public (constitutional) law science** (Hungarian Academy of Sciences, Centre for Social Sciences Institute for Legal Studies) – English title of presentation: *The position of Autonomy of Higher Education in Public Law*;
- **Hungarian Higher Education Conference 2017** (Corvinus University Budapest, Center for International Higher Education Studies) – English title of presentation: *Sector's control and management in light of managerial responsibility*;

- **The 16th Conference on Educational Assessment – CEA 2018**, Szeged, Hungary (The Institute of Education, the Doctoral School of Education at the University of Szeged, the MTA-SZTE Research Group on The Development of Competencies and the Educational and Psychological Committee of the Hungarian Academy of Sciences in Szeged) – English title of presentation: *The pedagogical idea of pupils' assessment in the light of Act on Public Education*;
- **Education – Economy – Society: Hungarian Conference on Educational Research – HuCER 2018**, Székesfehérvár, Hungary (HERA – Hungarian Educational Research Association) – English title of presentation: *Wondering, what the consistory is*;
- **Education in Modern Society: XVI Annual International BCES Conference** (Bulgarian Comparative Education Society) – Title of presentation: *Centralizations and Autonomies: The Delimitation of Education by the Hungarian Government.*

He is a member of Scientific Committee of the Conference of 2nd Danube Conference for Higher Education Management: In search of excellence in higher education (Corvinus University of Budapest and Ulm University), which planned date is late November in 2018.

Several professional bodies and projects count on his expertise. As secretary general, he was the president of Hungarian Rectors' Conference Collegium of Secretary Generals (Committee of Secretary Generals and Office Heads) between 2010 and 2015. As an additional professional public activity, he was a permanent guest on Round-table for Higher Education, as well as a delegate of Hungarian Rectors' Conference on Round-table for Higher Education Expert Team for Students' Responsibility in 2013. From 2007 he had been the secretary of Hungarian Lawyers' Association Section for Civil Process Law for five years. Today he is a member of Platform for Training in Economic Science, previous he was an expert team member of a project called „Reorganization of training in economic science" and co-editor of working paper titled "Possible directions of reorganization of training in economic science".

He is the project manager for the project "Anxiety versus ego strength – Investigating the ingredients of perceived safety: development of intervention tools and programmes for different actors and institutions functional at various segments of social safety", which has just won with his partial management almost 800.000,- Euros subsidy from the Hungarian State.

He is member of HERA – Hungarian Educational Research Association as well as Hungarian Academy of Sciences Public Body IX. Section of Economics and Law Committee on Legal and Political Sciences.

He speaks and publishes – apart from his native Hungarian language – in English and German.

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"SMART INTERNET, SMART APPLICATIONS, SMART EDUCATION"

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Abstract

Education has to always change because the environment and the conditions are changing in every second. Students live a smart technological life, they do not only use technology, but they live it. Education must follow the achievements of sciences, and it has (or should) use modern technology. New smart devices and software applications must be applied for improving the educational efficiency not only because education needs to transfer information faster, but because they may fit the educational methods into the students' everyday life. Students have smart devices, spend their free time with smart applications in smart virtual environments. When they step or look out from their 'normal' milieu in, e.g., a scholar environment, they find themselves in a little bit strange, very slaw, quite simple and not sufficiently motivating environment. How can we motivate these students? How can we involve them in tasks that require long and deep concentration? What kind of software and hardware technologies should we use for making the learning processes more motivating? In the other hand, do students have suitable and sufficient knowledge to use new technologies – others then the smart phones and the well-known applications – without pre-training them? Does education pay attention to train their students to be prepared for the new technological developments?

We have many adequate questions concerning smart education. There are number of surveys with the aim to discover the students' needs and the effectiveness of the applied new educational methods on each level of education. All of them can help us to get closer to choose optimal solutions for our educational processes.

In this presentation we attempt to discuss about some important concepts and some major definitions of this field. We present some good practices that can bring closer the educational methods and processes to the students' everyday operations. That is one of the most important and sometimes extremely complex task for educators of the future.

Short Biography

Gyöngyi Bujdosó, PhD, is a senior lecturer at the Faculty of Informatics, University of Debrecen in Hungary. She has MSc degrees on Mathematics, Computer Sciences and Chemistry, DEA and PhD in Informatics.

She worked as a database programmer and as the copy-editor of some scientific journals. Later she became a lecturer at UD. She has had courses in several fields of Computer Sciences.

She is the E-learning Coordinator of the university's Teacher Training Center, a member of the Women in Informatics Research and Education at Informatics Europe, and a regional representative of the Women in Sciences Association.

Her research interest includes Electronic Teaching, Information Transfer in Virtual Reality, IoT and ICT in Teacher Training, E-Learning, Designing and Developing Digital Curricula, Digital Literacy, Gender Studies.

More information on the internet:

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LIVE2WORK PROJECT: INCREASING THE CHANCES FOR SUCCESSFUL INTEGRATION OF PEOPLE IN SITUATIONS OF PROFESSIONAL VULNERABILITY

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Abstract

The project Live2Work is an ERASMUS+ Key Action 2 Strategic Partnership for cooperation and the exchange of good practices involving four countries (Portugal, France, Denmark and the Czech Republic). Its purpose is to develop an intervention methodology for end-users working with young adults (18-30 years) in situations of professional vulnerability, including migrants and refugees. Throughout this communication, we intend to briefly present the six outputs that constitute the project, namely, the theoretical handbook, the toolbox, the course guide, the in-service training courses, the online audio-visual learning scenarios, and the Moodle courses and learning platform on website. Particular attention will be given to the challenge of refugees' integration on a global scale, and to the theoretical rationale (with contributions from career normative models, career design, construction and management models, career systemic models, and career culturally adequate models) based on tendencies that value: (i) the personal system, (ii) the contextual system, (iii) the temporal system, (iv) complexity, chance, unpredictability and instability of life contexts, and (v) personal agency.

Keywords: *Live2Work Project, life projects, professional vulnerability, young adults, migrants and refugees.*

1. Live2Work Project Presentation

The Live2Work (L2W) stems from a partnership involving four countries (Portugal, France, Denmark, and the Czech Republic) and eight different institutions which together developed an innovative project of public utility, and of scientific relevance. The project´s main goal is to develop a work methodology for professionals (end users: mentors, advisors and trainers) dealing with young adults (18-30 years of age) facing professional vulnerability, including migrants and refugees, actively promoting the development of skills relevant to their ability to build healthy and sustainable life trajectories. Taking into consideration the nature of the target group, this project envisages to endow these different professionals with the necessary knowledge, skills, and strategies to promote and support each targeted individual in starting and developing his/her own life project. Therefore, targets are all those young adults between 18 and 30 years of age that currently experience professional vulnerability (unemployment) given the mismatch between their qualifications and/or skills and those demanded by the work market for a specific function. And the professional users are those who work daily with the target group, such as advisors, mentors and trainers.

The Project's specific objectives are:

(i) to create a proven work methodology that a diversity of professionals (end users) can offer in their organizations to the target group, regardless of their academic/professional background (e.g., psychology, social work, education);

(ii) to offer a set of scientifically supported, fun and attractive instructive activities, using working tools that are either created, adapted or reinvented;

(iii) to offer a set of formative activities that can be flexibly used, either as a default or customized to the person's needs and characteristics, or to the current stage of the participant's life project development;

(iv) training the end users in this work methodology through their participation in free and accessible workshops;

(v) to render available a set of instructional activities based on support materials that are obtained at an affordable production cost; and,

(vi) to allow for a free use of all materials/outputs produced by this project, that can be accessed at online platforms (e.g., project's website, Moodle platform).

To achieve such objectives, the project's different partners are jointly working on the production of six distinctive outputs:

(i) Output 1: Handbook of the project's conceptual frame, concerning the (re) construction of life projects of those in professionally vulnerable situations. The handbook's first section introduces the project´s objectives and distinctive characteristics and synthesizes each of its different stages and outputs. Section two focuses on the project's social relevance as it presents the demographic, educational and employability status at these different European countries, and the challenges faced by its migrants and refugees. It also presents a reflection on the importance of taking into consideration the issue of social justice on pair with professional knowledge and skills, while intervening in the construction of life projects with this target group. The third section analyses the different theoretical contributions taken as the theoretical framework for the making of the toolbox. Finally, section four presents the four modules - derived from the theoretical foundation - used for developing the instructional activities.

(ii) Output 2: Toolbox: The toolbox consists of a total of 19 instructional activities, organized into four distinctive modules. These modules include self-knowledge, knowledge of the world, transitional skills and decision making. For each activity a (a) "technician worksheet" and (b) an activity worksheet were developed: (a) The "technician worksheet" identifies the activity, the belonging dimension, the number of participants, duration and objectives to achieve, the necessary preparedness, and step-by-step instructions for its implementation; some observations/suggestions (e.g., for adapting the activity) and useful reference links are also added; (b) The activity worksheet, for distribution among participants, contains all the information regarding the nature of the activity and its implementation. Some of the activities are accompanied by a third printed sheet (c) the "supporting worksheet", that contains additional information to assist the technician on his/her presentation of the activity to the participants (e.g. the "Value by Image Cards" activity, is accompanied by a "supporting worksheet" that includes the definition of "Life Values", as well as examples and definitions of specific values).

(iii) Output 3: Course guide - a general set of instructions (includes a *PowerPoint* course) to assist the training of professionals on how to use all products associated with the project. A first draft was prepared so that all project members could run pilot courses in their own countries as a first test to the developed materials. A final comprehensive course guide version will later be compiled to assist other professionals running Live2Work workshops with their peers and colleagues, further spreading the tools, methods and ideas for successfully working with the development of new life projects.

(iv) Output 4: Piloting courses/ in-service training courses, aimed at testing the following materials: L2W conceptual framework, toolbox, and course guide (including workshop content and structure). The consortium organised several Live2Work Workshops that took place in Portugal, Czech Republic and Denmark. These workshops served the purpose of presenting the first three outputs, with the scope of receiving immediate reactions and recommendations from professionals actively working in the fields of unemployment, vulnerability, and refugee integration. Based on these information sources, each partner compiled a national workshop report, to share the feedback and findings with the whole L2W consortium. Their feedback was taken into consideration during the production of the final version of the tools and materials.

(v) Output 5: Online audio-visual learning scenarios. Up to now 4 videos have been produced within the project's context. One of these is intended for international promotional activities of the project. The remaining three are tutorial videos concerning the presentation of either a toolbox module or a toolbox specific module activity. The first video is a comprehensive tutorial for the implementation of the "Character Strength Cards" (Solitaire)" activity within the context of self-knowledge. The second which about world-knowledge, shows the importance of having a network of inter-personal relationships. The third video pertains to transition skills and stresses the relationship between thought, feeling and action, and the importance of changing the first two to achieve a more positive focus and a more positive action result. In addition to English audio, the videos will have subtitles in four languages. Currently all videos are being reviewed for approval by all partners, while a fifth video related to the toolbox's fourth module (decision making) is in preparation.

(vi) Output 6: Moodle courses and learning platform on website, with a set of interactive materials for online learning, that are easy and intuitive to use. The project already has a promoting website that can be visited at the address www.live2work.eu. Moodle courses open to the entire community will soon be created, making the project materials available and ready-to-use.

2. Exploring output 1: conceptual framework

2.1. The challenge of refugees' integration on a global scale

In the last few years people all over the Globe have experienced hard times, mostly due to 15 still unresolved conflicts. According to the United Nations High Commissioner for Refugees (UNHCR) these conflicts were responsible for the displacement of approximately 66 million people, causing people to either seek refuge elsewhere inside their country (internally displaced) or in more extreme cases to abandon their country (externally displaced). Contrary to the European general belief, most people if

forced to live their homes would rather stay in their country of origin or seek support in the neighbouring countries and would only look for help in Europe as a last resort. Notably, people have been fleeing from conflicts in Syria, Afghanistan, Iraq, Pakistan, and Nigeria, either by land or by sea, and a large majority perish while attempting to achieve a more secure, less violent, less abusive life, and one with less poverty (BBC, 2016; Eurostat, 2017; UNHCR, 2013). In 2015 Europe hosted approximately 1.3 million refugees, manly in Germany, Hungary, Sweden, Austria, Italy and France. However, there is a growing perception that migrants and refugees have not been welcomed in the best possible way. On arrival migrants bring with them a collection of necessities that need to be addressed such as physical (e.g. nourishment, shelter, protection) social (e.g., participation in educational, formative, professional, social, recreational, and citizenship activities) and psychological (e.g., stress, mourning, trauma, anxiety, depression, and suicidal ideation; Berger, 2013; Hovey & Magana, 2003; Yakushko & Chronister, 2005). This growing awareness to assist these vulnerable people and to provide them the means to a full social integration is counteracted by a strong degree of mistrust in their ability to achieve it, and concerns that their presence among us could actually increase the risk of terrorism, violence and criminality in our societies (Yakusho, et al., 2008); This adds up to the social costs associated with providing shelter, education, and training, and to the fear migrants will reduce the number of job opportunities for national citizens which is already low. In truth the discriminatory treatment towards migrants is a barrier to their full integration and adaptation, and only contributes to perpetuate the cycles of poverty, vulnerability and exclusion, regardless of their permanent, or temporary settlement, as they wait for the conditions in their country of origin to change, allowing them to return in safety.

An inclusive fair and equalitarian society is constructed having in mind the satisfaction of its citizen's needs, whether physical or psychological, and creates the necessary opportunities for full realization of their citizen's potential. Such society should implement an array of diverse actions that will empower the individual, and allow equal access opportunities, resources and values, regardless of his/her gender, race, ethnicity or religious belief (e.g., Hartung & Blustein, 2002; Helms, 2003; Herr, 2001; Herr & Shahnasarian, 2001; Irving & Malik, 2004). In what specifically concerns the needs of self-realization, the refugees' developmental potential through information, guidance and career counseling activities is crucial given the likelihood that self-realization will play a significant contribution to his/her integration in a new culture (Yakushko, 2006); the enrolment in these activities will provide the refugee with the acquisition and training of new skills, necessary to face the ever changing realities of the world market, which, in the end, may be to his/her benefit should the refugee decides to return to his/her country of origin.

Next, we will present the theoretical support for the project's goals of successfully integrating people that find themselves in a professional vulnerable situation, which includes migrants and refugees.

2.2. The rational of the L2W: Contributions from career models

The construction of life projects which is the basis of the L2W project, output1, in what concerns the conceptual handbook, is founded on four distinct theoretical perspectives:

(i) The normative models (e.g. Developmental theory of Super, 1953, 1990; Circumscription and Compromise of Gotfredson, 1996, 2005): which considers career development as an individual continuous process, that unfolds over the individual's life stages, over which the individual plays several different roles that differ in prominence, thus providing a broader vision of career, both longitudinal and latitudinal.

(ii) The Design, construction and management of career models (e.g., Greenhaus, Callanan & Godschalk, 2010, Pinto & Taveira, 2011): which puts the emphasis on the cyclic, recursive and systematic nature of the process of decision making and problem solving, containing stages such as self-exploration, environmental exploration, the development of objectives, definition and implementation of an action plan, and feedback and evaluation, mostly relying on the assumption of personal responsibility;

(iii) The systemic models (e.g., Systems Theory of Patton & McMahon, 1997, 2006; Chaos Theory of Bright & Pryor, 2005; Ecologic Approach of Coyne & Cook, 2004): which recognize the individuality of each client, are culturally inclusive and place the individual "in context" within a set of systems (individual, social and contextual) that relate among them in an open, circular and recursive manner, that have highly permeable boundaries, and are susceptible to chance; and,

(iv) The culturally sensitive models (e.g., Culturally Appropriate Model of Fouad & Bingham, 1995; Integrative-sequential conceptual model of life career counselling of Leong & Hartung, 2000): which delineate the process of career counselling in a number of stages during which the role played by the client's culture (and that of the Psychologist) is constantly emphasized, focusing on the education of minorities as a route to end the poverty and discrimination cycle.

The theoretical rationale of the Live2Work project departs from the analysis of the above models and encompasses the following detailed assumptions:

(i) The personal system: encompasses all socio-demographic (e.g., gender, age, ethnicity, race, religion, level of education) and psychologic characteristics (e.g., personality traits, interests, values,

strengths, skills, attitudes) that define a person and can influence a person's life trajectory; it is important to educate the person about the relevance of increasing his/her the awareness of these traits since they can be very helpful for the understanding of his/her past self, and present self as well, and who he/she wants to be in the future; and how these traits can work for his/her benefit by assisting in the pursue of new life projects, in a world full of contradictions;

(ii) <u>The contextual system</u>: encompasses all of the person's life contexts, from the closest ones, family, peers, neighbors school and/or work, to those more distant ones, social support, financial and legal institutions; it is important to help the person to explore, understand and use the educational, formative and professional information and to identify the positive (negative) influence the diverse contexts exerted on his/her life, and how they can contribute to attain future projects;

(iii) <u>The temporal system</u>: contains the past, present and future dimensions and their interactions with the personal and contextual systems over time; it helps the person to "relive" his/her life's trajectory over time, by creating an awareness of who he/she was, and what he/she became based on past decisions (i.e. how his/her past influenced who he/she currently is); and what future he/she intends to create from where he/she stands; this idea of continuity in a life's path is important since all life decisions are interlocked;

(iv) <u>Complexity, chance, unpredictability and instability of life contexts</u>: This matches the everchanging aspects of life and context concepts; these changes have been described in the literature as unstable, unpredictable and dynamic and therefore hard to control; people are advised to accept these changes as influential in their lives and deal with the circumstances the best possible way they can; the idea that life's objectives can also change over time and therefore people have to constantly make informed and conscious decisions is also derived from this assumption.

(v) <u>Personal agency</u>: this assumption is about awakening people for their need to regain control over their lives even when chance plays a significant role; a person must be the prime agent of his/her life transformation, and thus one should be encouraged and supported to assume his/her own responsibility in this matter; in doing so the person will cease to be a passive agent waiting for the opportunity to come, and even in the face of unpredictable circumstances he/she will be able to create new opportunities and steer a path, acting swiftly and efficiently (e.g. developing new skills) towards his/her defined life's goals.

Figure 1 graphically illustrates the above 5 assumptions supporting the theoretical rationale of Live2Work project.

Figure 1. Theoretical rationale of Live2Work project.
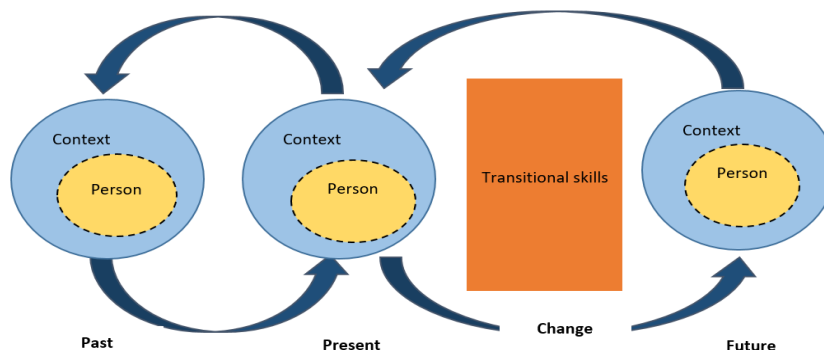
3. Further development of L2W project

Recently the outputs 1 to 4 were tested in pilot studies conducted by technicians that represent the intended end users - those who will be using these materials, i.e. those that will be working with professionally vulnerable young adults (the target group). These pilot studies, developed between September and November of 2017 in Portugal, Denmark and Czech Republic, were conducted to test receptivity to the project and its materials' and their suitability to the intended end users and target group.

Currently all outputs (Handbook of the project's conceptual frame, the toolbox, the course guide and the workshops) are being revised by the project team in response to feedback obtained from the aforementioned pilot studies, to guarantee that all outputs are internationally adequate and at the same time take into consideration whatever national specifications might be considered necessary to add. In the future, outputs 5 and 6 (e.g. the videos and the e-learning platform), will also be subjected to further assessment. As mentioned before, a promotional video and three tutorial videos are already available, but are still under internal scrutiny and revision. Work on the e-learning platform will begin this May of 2018. Afterwards, it will be disseminated through the community, thereby guaranteeing that the entire project and all its materials will be made publicly available. The project will officially be completed on February 2019, but a major international event is scheduled for September 2018, marking its conclusion and presenting both the project and its outputs. The event, hosted by Universidade Católica Portuguesa, at

its Lisbon campus, will consist of a final summit (and a few workshops) that will be directed on the one hand, to the wider community and on the other, to institutions that work with vulnerable people (NGO's and refugee centers).

References

BBC (2016). Migrant crisis: Migration to Europe explained in seven charts. Available from: http://www.bbc.com/news/world-europe-34131911 [Accessed 26 December 2017]

Berger, R. (2013). *Immigrant women tell their stories*. Routledge.

Bright, J. E., & Pryor, R. G. (2005). The chaos theory of careers: A user's guide. *The Career Development Quarterly*, *53*(4), 291-305.

Coyne, R. K., & Cook, E. P. (2004). Understanding persons within environments: An introduction to ecological counselling. *Ecological counselling: An innovative approach to conceptualizing person environment interaction*, 3-35.

Eurostat (2017) Asylum Statistics: Statistics explained. Available from: http://ec.europa.eu/eurostat/statistics-explained/index.php/Asylum_statistics [Accessed 26 December 2017]

Fouad, N. A., & Bingham, R. P. (1995). Career counseling with racial and ethnic minorities. *Handbook of vocational psychology: Theory, research, and practice*, *2*, 331-265.

Gottfredson, L. S. (2005). Using Gottfredson's theory of circumscription and compromise in career guidance and counseling. *Career development and counseling: Putting theory and research to work*, 71-100.

Gottfredson, L. S. (1996). Gottfredson's theory of circumscription and compromise. In D. Brown, L. Brooks, & Associates, Career choice and development (3rd ed., pp. 179–232). San Francisco: Jossey-Bass.

Greenhaus, J. H., Callanan, G. A., & Godshalk, V. M. (2010). Career management (4th ed). Thounsand Oaks: Sage Publications, Inc.

Hartung, P. J., & Blustein, D. L. (2002). Reason, Intuition, and Social Justice: Elaborating on Parsons's Career Decision-Making Model. *Journal of Counseling & Development*, *80*(1), 41-47.

Helms, J. E. (2003). A pragmatic view of social justice. *The Counseling Psychologist*, *31*(3), 305-313.

Herr, E. L., & Shahnasarian, M. (2001). Selected milestones in the evolution of career development practices in the twentieth century. *The Career Development Quarterly*, *49*(3), 225-232.

Herr, E. L. (2001). Career development and its practice: A historical perspective. *The Career Development Quarterly*, *49*(3), 196-211.

Hovey, J. D., & Magaña, C. G. (2003). Suicide risk factors among Mexican migrant farmworker women in the Midwest United States. *Archives of Suicide Research*, *7*(2), 107-121.

Irving, B. A., & Malik, B. (Eds.). (2004). *Critical reflections on career education and guidance: Promoting social justice within a global economy*. Routledge.

Leong, F. T., & Hartung, P. J. (2000). Adapting to the changing multicultural context of career. *The future of career*, 212.

Patton, W., & McMahon, M. (Eds.). (1997). *Career development in practice: A systems theory perspective*. New Hobsons Press.

Patton, W. A., McMahon, M. L., & Watson, M. B. (2006). Career development and systems theory: Enhancing our understanding of career. In *Career psychology in the South African context* (pp. 65-78). Van Schaik Publishers.

Pinto, J. C. & Taveira, M. C. (2011). Abordagens à carreira na vida adulta: estudo de avaliação de um modelo de intervenção [Approaches to careers in adult life: an evaluation study of an intervention model]. In M. C. Taveira (Coord.) Estudos de Psicologia Vocacional: Readings [Vocational Psychology studies]. Coimbra: Almedina.

Super, D. E. (1953). A theory of vocational development. *American psychologist*, *8*(5), 185.

Super, D. E. (1990). A life-span, life-space approach to career development.

UNHCR (2013). Global Trends 2013: War's Human Costs. Available from: http://www.unhcr.org/statistics/country/5399a14f9/unhcr-global-trends-2013.html. [Acessed 29 August 2017]

Yakushko, O., & Chronister, K. M. (2005). Immigrant women and counseling: The invisible others. *Journal of Counseling & Development*, *83*(3), 292-298.

Yakushko, O. (2006). Career concerns of immigrant women: Issues and implications for career counseling. *Handbook of career counseling for women*, 387-426.

Yakushko, O., Backhaus, A., Watson, M., Ngaruiya, K., & Gonzalez, J. (2008). Career development concerns of recent immigrants and refugees. *Journal of Career Development*, *34*(4), 362-396.

A COMPREHENSIVE APPROACH TO LEADERSHIP IN EDUCATION

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Abstract

The study examined the implemented process to assess and track the skills of leaders in education. This process includes mentoring, formal and informal coaching. It takes into account leaders' ability to base their decisions on a set of values they can easily defend and how they create a positive emotional climate in their environment. In this qualitative study participants were part of a purposive sample. The data collection was semi-structured interviews with focus on the concept of leadership and its development. The results of the study have provided a contextualized perspective of leadership in education that comprises of different forms: shared leadership, cultural leadership and pedagogical leadership. These forms of leadership are reflected in the way that leaders reach their goals and understand the challenges they face to ensure the collaboration of their staff.

Keywords: Transformational, leadership, collaboration, professional, community.

1. Introduction

Leadership practices are behaviours to adopt in order to set directions, build relationships, and develop people and the organization to sustain desired practices, improve the instructional program and secure accountability Of the categories identified, setting directions is considered to be a major part of leadership, as it underpins the setting of goals and the creation of a shared vision, (Leithwood & Jantzi, 2006; Leithwood & Louis, 2012). This category is associated with a leadership model known as transformational leadership. It emphasizes the development of a vision by leaders and their ability to support and stimulate staff and get them engaged to accomplish shared goals. The transformational leadership model has been empirically studied from different angles. The theory behind transformational leadership assumes that leaders have a vision, that they are able to discursively explain this vision, and they have the passion to accomplish great things by inspiring while providing a behavioural model that is coherent with their vision. Transformational leaders strive for excellence and encourage their colleagues to share their vision by creating trust (Berger, 2009). By using the framework of transformational practices, the study examined the implemented process to assess and track the skills of leaders in education through their reflections.

2. Methodology

Qualitative data provide a contextualized perspective from the participant's point of view, (Denzin & Lincoln, 1994). Qualitative data was collected in the form a case study, as this yields accurate descriptions of specific situations (Yin, 2009). According to Stake (1995), the case can be programs, groups or individuals and constitute units of analysis. In this study, the case is the whole array of leadership practices. Semi-structured interviews focused on the role of leaders, their responsibilities, and their concept of leadership. Participants in the qualitative data collection were part of a purposive sample. Forty leaders indicated their availability to participate.

The data associated with each case was perused in accordance with interview protocols. The intra-case analysis helped identify the emerging themes of leaders' practices. The data analysis procedure preserved the nuances and complexity of the practices used by leaders.

3. Presentation of the results

3.1. Structuring the organization to facilitate collaboration

Strong leadership is reflected in a leader's ability to create a shared vision among staff to foster acceptance of group goals. Creating a shared vision is an important aspect of developing a positive culture. The importance of having a shared vision and associated values and goals, is due to the fact that these are the foundation blocks upon which a collaborative learning community is built (Crowther, Ferguson & Hann, 2009). Research has pointed to the importance of collegiality and collaboration among staff and shown that consistency will ensure an atmosphere of trust to engage *staff in a climate in which everyone works not only at their own pace, but also towards common goals. For this to happen, a lot of collaboration is needed to move together towards a goal.*

When working as a team, it is possible to help one another as one leader mentions: *We can lend a hand to reach conclusions ...It's important to be a facilitator, because there's someone on your staff who will need a little thank-you, there's someone else who will need support for a longer period of time because they are a little insecure about a situation...*

Leaders learn by taking risks sometimes. *If we see that an initiative is not going the right way, it's better to admit it. If there are decisions we made that were maybe not the right decisions, we must not be afraid to say that that we thought it was the right choice at the time, but it did not work out well. We can change direction and not be afraid to admit that things are not going well ... we shouldn't be rigid in our thinking and approach.*

3.2. Vision for a positive environment

Leithwood & Reihl (2005) consider that building a vision and setting directions is one of the core practices of successful leadership. The vision is a source of inspiration, and it becomes a reality through action, which requires agreement about the objectives that must be achieved to move closer to achieving the vision. Formulating a vision involves having widely-shared beliefs about learning and well-being. Leaders who participated in the study have identified that they spend time to ensure that their vision is widely known, understood, and shared by all members of the organizations. One leader mentions that: *I invite staff to share their questions and concerns...*

The vision is part of the culture and like-minded approach. On assessing the culture, one leader said: *It gave a shared vocabulary: How do we assess our culture, where we are, where we want to go? It's the foundation.*

Leaders feel that interactions with staff must be founded on mutual trust, a sense of partnership and high moral standards. They want to create an environment that fosters creativity and innovation. According to Barth (2001) in such an environment staff are more cooperative and productive. The need to value efforts should be considered when it comes to equitable treatment of staff. For a leader; *it is about valuing what each person brings to the table, and "equitable" does not mean "equal" so there might be differences in your expectations of people depending on their role but that does not mean in the end that it's not fair, and that people won't be happy with that.*

Leithwood & Beatty (2008) have also demonstrated that developing a shared vision builds consensus on goals. Leaders have a significant positive impact and create a positive climate within schools. One leader asserts that it all starts with the school climate. *When a school climate builds trust, people feel more comfortable trying new things... they are encouraged to take risks and their successes are celebrated along with the things that did not work as well.*

3.3. Professional community to support mentoring and coaching

Social resources encompass the leader's ability to understand the feelings, thoughts and behaviours of persons, including themselves, in interpersonal situations and to act appropriately on that understanding. From a leader: *So, the point of departure for me is to determine what kind of leader I am, and to see if I'm making room for others to show leadership. A collaborative style of leadership will be more open and more conductive to making room for others to get involved.* Personal leadership resources are demonstrated through leaders' ability to base their decisions on a set of values they can easily define. They have confidence in their abilities to find ways to reach their goals and are optimistic that their initiatives will produce positive results.

Communication is important for creating relationships in order to offer the best possible services. Furthermore, management practice in the area of education is above all based on profound human respect. Leaders show instructional leadership when they succeed in developing a success-based academic culture. (Campbell, Gold & Lunt, 2003). Shared leadership is essential to mentor staff in order to develop ideas and align them with the vision. According to Patterson and Rolheiser (2004), when leaders and staff work to form a professional teaching community to support mentoring and coaching, they influence the working and learning climate of the community. To develop an effective professional learning

community, leaders must act, initiate, promote, delegate, innovate and foster a spirit of collaboration. A leader mentions that *...a lot of learning takes place in professional learning communities and many kinds of training, coaching happens.*

Leaders consider difficult problems to be manageable if considered carefully, and they rely on the collection of relevant information, rather than assumptions, to help them clarify the problem. They often involve others with a stake in the problem in order to arrive at a productive and defensible interpretation. One leader thinks that it is important: *to welcome initiatives that they bring up when they come to see us...to respond favorably.*

As the challenges facing leaders become more and more complex, there is an increasing drain on their psychological resources. Well-developed psychological resources allow leaders to cope productively in the face on complex situations without giving up, experiencing excessive strain or becoming burned out. A leader noted: *When we treat everyone with respect and allow them to have a voice, we ensure their commitment, we ensure that have their chance to bring their best and make a contribution to a positive environment, and so on.* It's a self-efficient leadership to inspire, bring together, and work with a team to make collaborative missions. Concretely, this translates into participative and shared leadership.

4. Conclusion

Leaders who participated in the study have described how their leadership skills (practices) have educational, participatory and shared attributes. Furthermore, these forms of leadership are reflected in the proximity of leaders to their staff. Another aspect of these forms of leadership is that leaders ensure that staff fully participates in decision making. Leaders have the confidence to find ways to reach their goals and are optimistic that their initiatives will produce positive results. They also create an appropriate environment in which staff members' ideas can be heard, valued and taken into consideration. Open communication supports a professional learning community that allows staff to take on leadership roles in promoting a positive environment.

Goleman (2006) believed that the qualities traditionally associated with successful leadership, such as intelligence, strength, resolve and vision are necessary but insufficient. There are many personality traits or personal characteristics associated with leaders and leadership. In addition to the practices found to be effective, the leaders who participated in the study have identified their capacity for problem-solving and the importance of having a good knowledge of their staff and of their environment.

References

Barth, R.S. (2001). Teacher leader. *Phi Delta Kappan, 82*(6): 443-449.

Berger, M.J. (2009). Leadership in equity practices: Issues for social and cultural challenges. Dans Sokolova, I.I. (Ed.) *Pedagogical education: Contemporary problems, modern concepts, theories and practices.* Russian Academy of Education, Saint-Petersburg. 270-284.

Campbell, C., Gold, A., & Lunt, I. (2003). Articulating leadership values in action: Conversations with school leaders. *International Journal of Education Reform 6*(3), 203-221.

Crowther, F., with Ferguson, M., & Hann, L. (2009). *Developing teacher leaders: How teacher leadership enhances school success* (2nd ed.). London: Sage Publications.

Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of qualitative research.* Thousand Oaks, CA: Sage Publications.

Goleman, D. (2006). *Social intelligence: The new science of human relationships.* New York, NY: Bantam Dell.

Leithwood, K., & Louis, K. S. (2012). *Linking leadership to student learning.* San Francisco: Jossey-Bass.

Leithwood, K., & Beatty, B. (2008). *Leading with teacher emotions in mind.* Thousand Oaks, CA: Corwin Press.

Leithwood, K., & Riehl, C. (2005). What we know about successful school leadership. In W. Firestone & C. Riehl (Eds.). *A new agenda: Directions for research on educational leadership* (22-47). New York, NY: Teachers College Press.

Leithwood, K., & Jantzi, D. (2006). Transformational leadership for a large-scale reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement, 17*(2), 201–227.

Patterson, D. & Rolheiser, C. (2004). *Creating a culture of change.* Oxford, OH: National Staff Development Council.

Stake, R. (1995). *The art of case study research.* Thousand Oaks, CA: Sage Publications.

Yin, R.K. (2009). *Case Study Research: Design and Method* (4th ed.). California: Sage Publications.

THE EFFECT OF COLLABORATIVE LEARNING ACTIVITIES ON HIGH SCHOOL STUDENT BELIEFS, CONFIDENCE, AND LEARNING STRATEGIES IN CHINESE LANGUAGE INSTRUCTION

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Abstract

A growing number of students in U.S. schools are learning Mandarin Chinese. In 2013, Mandarin was the second-most popular foreign language offered in U.S. public schools. Educators continue to seek ways to improve learning outcomes that are compatible with the increasingly diverse student populations in foreign-language classrooms. Can collaborative learning activities help achieve this goal?

This study explored the effects of collaborative learning activities on learners' attitudes, beliefs and learning strategies in Chinese language instruction for non-native speakers. Thirty-five English-speaking suburban public high school students in the Midwestern United States in Chinese language classrooms participated in collaborative projects as part of their class activities. Each student took Chinese class every day of the week for 45 minutes. Identical pre- and post-surveys with three different scales were used to collect data. A "Beliefs about Chinese Learning" scale included 17 Likert-type questions on a five-point response scale (1 = strongly disagree, 5 = strongly agree). A "Confidence in Ability to Learn Chinese" scale included 20 questions with ratings ranging from 0 (not sure at all) to 100 (completely sure); in this scale students rated how sure they were of their ability to complete a variety of specific Chinese learning tasks. A "Language Learning Strategies" scale included 28 Likert-type questions on a five-point response scale (1 = never or almost never true, 5 = always or almost always true). Students rated how often they use each of the strategies listed in learning Chinese.

The results from the paired t-tests indicated that there was a significant change in student beliefs (i.e. they came to believe that learning Chinese was much more important in their lives) from pre-survey to post-survey ($t[34] = 15.26$, $p < .001$), student confidence in their ability to learn Chinese ($t[34] = 8.39$, $p < .001$), and use of strategies (i.e. student tendency to use a wider variety of learning strategies more frequently, $t[34] = 19.82$, $p < .001$). In addition, they showed pleasure in collaborative learning and work in which they participated and only one student indicated a preference to finish work individually. Most of the students concurred that collaborative tasks provided them more opportunity to experience different points of view, work effectively, help each other, and make more use of the Chinese language.

Keywords: Collaborative learning, Chinese learning, motivation, confidence, strategies.

1. Introduction

Mandarin Chinese is becoming a global language (Ingold & Wang, 2010). There exists a growing number of Chinese language programs established in U.S. schools due to collaborative efforts among local, national, and international entities. In 2010, the Asia Society and College Board reported that there were 263 Chinese language programs established in elementary and secondary schools in 2004. This number grew to 779 in 2008 -- a more than 200 percent increase (Asia Society, 2010).

In 2013, Mandarin was the second-most popular foreign language offered in U.S. public schools (Spanish was first); by teaching Mandarin, the U.S. can prepare American students to become tomorrow's leaders, able to work and compete in the multilingual workplace of a globalized world where the U.S. and China maintain bilateral ties (Markell & Herbert, 2016). We believe that the number of American students who want to learn Mandarin will continue to grow.

For the growing number of individuals learning Chinese around the world, classroom learning environment has a major effect on motivation; students enjoy learning activities in which they can participate and practice what they have learned (Wang, Kong, & Farren, 2014). With increasingly diverse student populations in the classroom learning environment, can collaborative activity be used to improve learning outcomes in a classroom learning environment?

Collaborative activity can be described as tasks that require learners to work in pairs or small groups and jointly produce a single oral or written text. Dobao and Blum (2013) found that learners' reactions to collaborative learning activities were overall very positive; only 4 out of the 55 students in their study said they would have preferred to work individually.

The observation that learners who carried out these collaborative activities produced more "why-questions" with provided auxiliary verbs suggests that learners can benefit from syntactic priming activities when they interact with partners or group members during the class (McDonough & Chaikitmongkol, 2010). In addition, collaborative activities address learners' needs and understanding and can affect learners' attitudes and learning quality.

Because collaborative activities create an environment in which both resources and responsibility for a task are shared, they can also reduce the stress sometimes felt by students asked to complete learning activities individually.

In addition, collaborative group activities help learners to improve their socialization and interactivity skills in an EFL classroom (Rahaman, 2014). Based on the research of Frykedal and Chiriac (2011), students appreciate collaborative group activity as a means of learning.

Working in groups has long been thought of as a means of enhancing students' sense of appreciation for work and interest in learning, and as an approach which also encourages learners to learn from group members' perspectives and strengths (Elliott & Reynolds, 2014). During collaborative activities, learners are more active participants rather than simply engaging in passive task completion; the teacher intentionally passes the learning responsibility to learners by providing different processes of discovering problems, understanding the contents, and offering varied methods to solve problems (Jansen, 2012).

The 35 American suburban high school students learning Chinese who participated in this study had an overall positive attitude toward both paired and small group projects. They showed pleasure in collaborative, participatory learning and only one student indicated a preference to finish work individually. Most of the students concurred that collaborative tasks provided them with more opportunities to experience different points of view, work effectively, help each other, and make more use of the Chinese language.

2. Design

These Chinese classes aimed to develop students' reading, listening, speaking and writing skills in Chinese, with a particular focus on vocabulary levels and use of basic grammar.

Flashcards were used to provide visual sentence construction prompts involving characters, verb phrases, and different tenses previously covered using other class activities. In each class, half of the students worked individually and the other half were assigned to work in pairs or small groups for 25 minutes. Partners and group members were required to collaborate during the tasks and produced one project for the entire group.

In this study, identical pre- and post-surveys were used to collect data regarding students' perspectives on Chinese language learning as well as their selection of learning strategies when learning Chinese. One section of the survey is related to "Beliefs about Chinese Learning"; the second is related to "Confidence in Ability to Learn Chinese", and the third addresses selection of language learning strategies.

3. Objectives

The overall purpose of this study is to examine the effect of collaborative learning activities on U.S. suburban high school students' beliefs and attitudes regarding their ability to learn Chinese, as well as on their selection of strategies for learning Chinese. The study is guided by the following research questions: (1) How are students' beliefs about learning Chinese affected by collaborative learning activities?; (2) How are students' levels of confidence regarding their ability to learn Chinese affected by collaborative learning activities?; and (3) What effect does participating in collaborative learning activities have on students' selection of language learning strategies?

4. Methods

4.1. Participants

The study was conducted in a Chinese language classroom in a Midwestern U.S. suburban public high school. All participants were currently enrolled in a class learning Chinese as a secondary language, and had been enrolled for at least for one year.

35 students participated in this research including 20 females and 15 males. 20 were in the tenth grade, 10 were in the eleventh grade, and 5 were in the twelfth grade. The average age was 16. Twenty-nine of the students were Caucasian, 4 were Asian (2 Vietnamese and 2 Burmese), and 2 were Hispanic; none were native speakers of Chinese.

All students were familiar with pinyin (Chinese pronunciation system), basic greeting phrases, numbers, family numbers, 12 Chinese Zodiacs, a few colors and basic grammar. Each student took Chinese class every day of the week for 45 minutes.

The same collaborative tasks as well as the identical pre- and post-surveys administered by the Chinese language teacher were completed by all participants.

4.2. Procedures

All of the collaborative tasks for this study were completed in the Chinese language classroom, whose schedule did not change during the study. The procedure included three steps. The first step was to establish a baseline; for this step, all the participants completed a pre-survey in class. Each question had one answer, with no multiple selections. If the student was not in school on that day, she/he completed the pre-survey on the second day after the class. The second step was to carry out instruction with collaborative tasks. Each class was at the same level, taught by the same teacher using the same syllabus, textbook, worksheets and classroom settings. Students were divided into several groups in each class, depending on their behaviors, characteristics, family backgrounds, scores, and strengths. Students were familiar with their partners and group members, and there was no observed conflict during the tasks. In the third and final step, on the last day of the study, students completed a post-survey. All the students completed the post-survey.

4.3. Instruments

In this study, the data were collected from the identical pre- and post-surveys. Each survey includes a section of general demographic questions, a section of scale about "Beliefs about Chinese Learning", a section of scale of "Confidence in Ability to Learn Chinese", and a section of scale of "Language Learning Strategies". The general demographic questions include student's grade level, age, gender, level of study in Chinese, ethnicity, primary language spoken at home, and amount of time spent on Chinese learning. The scale of "Beliefs about Chinese Learning" includes 17 Likert-type questions on a five-point response scale (1 = strongly disagree, 5 = strongly agree). Example questions are "If I can speak Chinese, I can find more interesting and better jobs" and "Learning Chinese broadens my horizons". The scale of "Confidence in Ability to Learn Chinese" includes 20 questions, with 5 in each of the following four areas: reading, listening, speaking, and vocabulary. The rating scale ranges from 0 (not sure at all) to 100 (completely sure). Students rate how sure they are of their ability to complete a specific Chinese learning task. Example tasks are "use a Chinese text to accomplish a task in real life" and "communicate the main point(s) of what you want to say". The scale of "Language Learning Strategies" includes 28 Likert-type questions on a five-point response scale (1 = never or almost never true, 5 = always or almost always true). Students rate how often they use each of the strategies in learning Chinese. Example questions are "I use flashcards to learn new Chinese words" and "I use rhymes to help me learn new Chinese words".

4.4. Results

The following table (Table 1) indicates the means and standard deviations of student outcomes before and after intervention.

Table 1. Means and Standard Deviations of Student Outcomes Before and After Intervention.

	Pre-intervention		Post-intervention	
Variables	Mean	SD	Mean	SD
Beliefs	47.20	3.81	64.89	4.61
Confidence	1170.51	122.14	1339.14	88.82
Strategies	71.17	6.24	108.11	7.06

Paired t-tests were conducted to examine whether there were significant differences in student beliefs about and confidence in ability and use of strategies to learn Chinese as a foreign language. The results indicate that there was a significant change in student beliefs (i.e. they came to believe that learning Chinese was much more important in their lives) from pre-survey to post-survey (t[34] = 15.26, p < .001), student confidence in their ability to learn Chinese (t[34] = 8.39, p < .001), and use of strategies (i.e. student tendency to use a wider variety of learning strategies more frequently, t[34] = 19.82, p < .001).

5. Discussion

The data indicate that three significant changes took place between the time of the pre-survey and the time of the post-survey: Students came to believe that learning Chinese was more important than they had previously thought, students became more confident in their ability to learn Chinese, and students began using a wider variety of Chinese language learning strategies and/or using these strategies more frequently.

The treatment that occurred during this time period was participation in a variety of Chinese collaborative learning activities, and ideally one would like to conclude that these activities were responsible for the observed changes. However, a limitation of the study is the absence of a control group; it is possible that the changes were simply due to the passage of one semester's worth of time in Chinese class rather than to the collaborative learning activities. In the future, it would also be worth investigating whether there are differences in these results related to differences in languages spoken in learners' homes.

6. Conclusions

Subject to the caveat that some or all of the observed effects may have been due to the passage of time rather than to the collaborative learning activities that constituted the treatment in this study, the data indicate that participation in Chinese language collaborative learning activities had a significant effect in increasing the positivity of student beliefs about learning Chinese, their confidence in their own ability to learn Chinese, and the variety and frequency of the learning strategies they selected while learning Chinese.

References

Asia Society. (2010). Meeting the challenge: Preparing Chinese language teachers for American schools. Retrieved September 19, 2017, from http://asiasociety.org/files/chinese-teacherprep.pdf

Elliott, C. J., & Reynolds, M. (2014). Participative pedagogies, group work and the international classroom: An account of students' and tutors' experiences. *Studies in Higher Education, 39*(2), 307–320.

Dobao, A., & Blum, A. (2013). Collaborative writing in pairs and small groups: Learners' attitudes and perceptions. *System, 41*, 365-378.

Frykedal, K. F., & Chiriac, E. H. (2011). Assessment of students' learning when working in groups. *Educational Research, 53*(3), 331–345.

Ingold, C. W., & Wang, S. C. (2010). *The teachers we need: Transforming world language education in the United States*. College Park, MD: National Foreign Language Center at the University of Maryland. Retrieved September 21, 2017, from http://www.nflc.org/publications/the_teachers_we_need.pdf

Jansen, A. (2012). Developing productive dispositions during small-group work in two sixth-grade mathematics classrooms: Teachers' facilitation efforts and students' self-reported benefits. *Middle Grades Research Journal, 7*(1), 37-56.

Markell, J., & Herbert, G. R. (October 25, 2016). Mandarin learning is a must: Learning Mandarin is critical to the educational and economic success of American students. Retrieved September 20, 2017, from https://www.usnews.com/opinion/knowledge-bank/articles/2016-10-25/teaching-mandarin-chinese-should-be-a-priority-for-american-schools

McDonough, K., & Chaikitmongkol, W. (2010). Collaborative syntactic priming activities and EFL learners' production of *wh*-questions. *The Canadian Modern Language Review/La Revue canadienne des langues vivantes, 66*(6), 817–841.

Rahaman, A. (2014). Reading comprehension through group work activities in an EFL classroom: An action research report. *Working Papers on Culture, Education and Human Development, 10*(2), 1-8.

Wang, A. H., Kong, A., & Farren, T., Sr. (2014). What learning environment factors motivate non-heritage language learners in middle grades to learn Chinese? *Electronic Journal of Foreign Language Teaching, 11*(2), 312–326.

COMPARING TRADITIONAL LEARNING MATERIALS WITH THOSE CREATED WITH INSTRUCTIONAL DESIGN AND UNIVERSAL DESIGN FOR LEARNING ATTRIBUTES: THE INSTRUCTORS' PERSPECTIVE

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Abstract

There are foundational universal design for learning (UDL) principles that support accessibility and inclusivity that can be incorporated into instructional materials. Universal design for learning is also referred to as universal instructional design (UID). Although UDL has been in the curriculum development stream for some time, creating instructional materials that are accessible and inclusive for Vocational Trades Education (VTE) is a comparatively new endeavor. Challenges most faculty face regarding UDL is acquiring the skills needed to apply UDL principles and then having the time to design materials that meet the needs of most learners.

This paper discusses the UDL principles employed in instructional materials that were created to teach piping trades students how to solder and braze copper pipe. A summative quantitative and qualitative analysis was conducted with faculty to determine whether the new materials had more or less instructional impact than the original curriculum. The findings showed that significant positive differences did exist between the new curricula as compared to the original materials.

Keywords: Universal design for learning, accessibility, inclusivity, universal instructional design, vocational.

1. Introduction

As compared to typical students, learners with disabilities particularly need their instructional materials to be designed in ways that specifically help them learn. The instructional resources need to be intentionally-designed to help them overcome their limitations. In an effort to teach piping trades students how to solder and braze copper pipe, UDL principles were incorporated into newly-created instructional materials. This paper discusses those UDL principles. The instructional materials that were created were designed to enable a variety of individuals with either cognitive or physical disabilities to learn as effectively as they can. Coincidentally, these UDL principles should also support typical learners. As will be discussed below, the created materials had attributes that were intended to support weak readers, deaf and hard of hearing individuals, students with a loss in vision, learners who have difficulties staying focussed, academically-weak students, cognitively-gifted students, learners with low confidence, and students with different learning preferences.

The purpose of this study was to assess whether instructors would positively perceive the specific instructional design and UDL attributes in the newly-designed materials as compared to the original materials that were designed without considering accessibility and inclusivity. The research question was: With respect to the instructional design and UDL attributes, were there significant differences between the newly-designed materials and the original materials? The independent variable was the materials presented. The dependent variable was the instructional-design and UDL attributes. The instructional design and UDL attributes of the construct addressed the learning outcomes, content organization, path to teach from, comfort of new instructors teaching from the PowerPoint, amount of content, images, video, summaries, learning preferences, practical component, importance of the content, effectiveness of the content, and grading (Fenrich, 2014; Coolidge, Doner & Robertson, 2015).

2. Literature review

The three main principles that guide the UDL framework are providing learners with multiple means of representation, action and expression, and engagement (Coolidge, Doner & Robertson, 2015).

Brain research on cognition and learning shows that individuals learn effectively in various ways (Rao & Meo, 2016). The UDL framework is based on that research (Rao & Meo, 2016). By applying the framework, educational materials can be made accessible to a wider range of learners (Coolidge et al, 2015; Rao & Meo, 2016).

In general, instructional materials that are created using an instructional design model, such as Gagné's Nine Events of Instruction, support all learners (Fenrich, 2015). Gagné's Nine Events of Instruction are gaining attention, informing the learner of the learning outcome, stimulating recall of prerequisites, presenting the material, providing learning guidance, eliciting the performance, providing feedback, assessing performance, and enhancing retention and transfer (Gagné, Briggs, and Wagner, 1988).

The created learning materials had specific attributes that were aimed to support accessibility and inclusivity. Weak readers received materials that contained clear and concise language, simple word choices, short sentences, the active voice, and visuals, and did not contain superfluous content. Deaf and hard of hearing students could access detailed notes, captioned video clips, and the same features that supported weak readers. Individuals with a loss of vision had access to digital versions of the content, the PowerPoint™ had high contrast colours and font sizes that met the "Web Content Accessibility Guidelines" of the World Wide Web Consortium (Henry, 2017), and described video and photographs. Students who are not always able to stay focused received more things to focus their attention on (e.g., numerous questions), varied activities (e.g., the PowerPoint presentation, samples to assess, and practical assignments), and cues (e.g., "The key things to remember are…", "Note that it is important to…"). To support academically weak students, the instructors were asked to include think-pair-share activities and pause five to ten seconds after asking a more difficult question. To further help these students, the content only addressed the learning outcomes, there were varied ways to learn the materials, there was a variety of media (video, images, and text), their attention was directed to important content, the content was provided in manageable chunks, there were many practice and feedback opportunities, they were given elaborative feedback, they saw videos of common mistakes, the content flowed in a logical order, the material was organized with headings and sub-headings, subsequent content was linked to previous content, they received meaningful and relevant content, and they had summaries that highlighted key concepts both within and at the end of topics. Support for academically-gifted students was accomplished through asking higher-order thinking questions, and the instructors were asked to encourage students to help each other learn the content. Instructors were encouraged to support students with low confidence by providing them with time to think, only asking them questions that they will likely know the answer to, including think-pair-share activities, and giving positive constructive feedback. To further support them, the material was designed to be presented in manageable chunks. To support different learning preferences, students were exposed to various activities (e.g., both theoretical and practical activities, assessing existing products, performing a water pressure test, individual work, and class discussions), had numerous interactions, received different questioning techniques, experienced a variety of media, had many feedback opportunities, and had both informal and formal assessments. Accessibility and inclusion were also supported because the new materials were available to the students both before and after the lesson (Cawthorne, 2015; Fenrich, 2015; Fenrich & Carson, 2017; Kennedy, Thomas, Meyer, Alves & Lloyd, 2014; Rao, Edelen-Smith, & Wailehua, 2015).

The authors of this study have not found any studies of this nature pertaining to trades training.

3. Methodology

To address weaknesses of solely quantitative or qualitative design, a mixed-methods research design was followed (Rodriguez, 2009). Quantitatively, statistical analysis, based on two-tailed, two-sample, unequal variance t-tests assuming a significance of 0.05, was used to compare the instructors' opinions of the instructional design and UDL attributes of the original materials to the newly-created materials. Instructor opinions were collected through an online survey. Qualitatively, each instructor was individually interviewed to determine what worked well and what should be improved.

3.1. The treatment

Each instructor in one experimental group presented the existing sixteen-slide PowerPoint. The slides had black text on a white background, images that were not in a workplace context, and a video of the entire soldering process that was done correctly. Each instructor demonstrated the whole procedure in the lab. Students completed three soldering and brazing projects, conducted a water test, and were graded by the instructor using a rubric that did not reflect the importance of each step. Each instructor in the other experimental group presented the new PowerPoint that consisted of 159 slides. The slides had white text on a dark blue background, images that were photographed in the lab, and a video of the entire

soldering process that was done correctly, videos of each step, and videos of incorrect procedures. Each instructor demonstrated the whole procedure in the lab. Students assessed previously-constructed projects to determine what was done well and what was done poorly, completed three soldering and brazing projects, conducted a water test, and were graded by the instructor using a revised rubric that considered the importance of each step.

3.2. The population and sample

The subjects were faculty in a post-secondary Piping Trades diploma program, in the province of British Columbia, Canada, teaching students how to solder and braze copper pipe. For the original materials, there were six different instructors. For the newly-designed materials, there were five other instructors. These instructors were not the instructors who taught from the original materials. The participants were volunteers from the Piping department.

4. Findings

The findings are based on the quantitative and qualitative analyses done.

4.1. Quantitative Analysis

Table 1. Instructional Design Attributes of the New Materials Compared to the Original Materials T-test Results.

p	Attribute Statement
0.007	The PowerPoint had clear and measureable learning outcomes.
0.203	The PowerPoint was well organized.
0.093	The PowerPoint provided an easy path to teach from.
0.007	A new instructor would be comfortable teaching from the PowerPoint.
0.277	The PowerPoint presented content in manageable amounts.
0.092	The images in the PowerPoint strongly supported learning.
0.042	The video clip(s) in the PowerPoint strongly supported learning.
0.034	The PowerPoint effectively summarized the key concepts.
0.007	The PowerPoint should suit students with different learning preferences.
0.007	The PowerPoint related well to the practical component.
0.076	The content presented in the classroom emphasized what is important for students to demonstrate in the practical projects.
0.076	The content presented in the classroom provided the information that students needed to solder and braze effectively.
0.657	The marking template accurately reflected the importance of each item assessed.

Quantitatively, statistical analysis, based on two-tailed, two-sample, unequal variance t-tests assuming a significance of 0.05, was used to compare the instructors' opinions of the instructional design and UDL attributes of the original materials to the newly-created materials. Instructor opinions were collected through an online survey. The n value is 11. The p values for the attribute statements are summarized in table 1.

4.2. Qualitative analysis

Qualitatively, each instructor was individually interviewed to determine what worked well and what could be improved. The interviewer was independent of the piping department so that the instructors would feel that they could speak freely. Based on the comments, it was determined that the instructors felt the newly-created PowerPoint more effectively supported learning although they also indicated the time needed to teach from the PowerPoint was too long as compared to the original PowerPoint.

5. Discussion

Based on quantitative findings, as shown in Table 1, and the qualitative findings, the new materials were significantly better than the original materials with respect to the following instructional design and UDL attributes:

- The PowerPoint had clear and measureable learning outcomes.
  - This finding was expected because clear and measureable learning outcomes were succinctly stated and emphasized throughout the new materials. In the original materials, the learning outcomes were less detailed and were not emphasized throughout.
- A new instructor would be comfortable teaching from the PowerPoint.
  - This finding was anticipated because details of the whole soldering processes were contained in the new PowerPoint. The original PowerPoint only had the basic information that students needed. Experienced instructors have learned what key points need to be stated with each slide. (T. Carson, personal communication, January 12, 2018).
- The video clip(s) in the PowerPoint strongly supported learning.
  - This finding was expected because the original PowerPoint had one video clip of the entire procedure and the new PowerPoint had video clips of the entire procedure, each step, and incorrect procedures.
- The PowerPoint effectively summarized the key concepts.
  - Given the new PowerPoint had more summaries and more details in the summaries than the original PowerPoint, this finding was expected.
- The PowerPoint should suit students with different learning preferences.
  - As compared to the original materials, this finding was anticipated because the new content had more media, existing products to assess, numerous interactions built into the PowerPoint, and the instructors were encouraged to pause to let students think and to include think-pair-share activities.
- The PowerPoint related well to the practical component.
  - This finding was expected because, as compared to the original content, the new content specifically addressed each skill that was needed to demonstrate the practical skills.

As shown in Table 1, there were no significant differences between the new materials and the original materials with respect to the following instructional design and UDL attributes:

- The PowerPoint was well organized.
  - This finding was unanticipated because the new content was broken into distinct sections and there were headings and sub-headings in the new PowerPoint. These features were not in the original materials. However, the finding may be due to both PowerPoints being well-organized. Five out of five instructors stated that the new PowerPoint was well organized, where four out of six thought that the original materials were.
- The PowerPoint provided an easy path to teach from.
  - This finding was not expected because, as compared to the original content, the new content was arranged into topics and sub-topics, and had clearer learning outcomes, essential details about each procedure, more media, and summaries and interactions built into the presentations. However, significant results were less likely because the sample size was small. Five out of five instructors thought that the new materials provided an easy path to teach from, where three out of six thought the same for the original materials. This explanation is supported with the significant finding that a new instructor would be comfortable teaching from the PowerPoint.
- The PowerPoint presented content in manageable amounts.
  - This finding was anticipated because the new content had a 159-slide PowerPoint and the original PowerPoint had sixteen slides. Instructors commented that the new PowerPoint was too long.
- The images in the PowerPoint strongly supported learning
  - This finding was unexpected because the new PowerPoint had many more photos than the original PowerPoint and they were taken in the workshop setting. However, the finding may be due to both PowerPoints having images that supported learning and/or the small sample size. Five out of five instructors stated that the images in the new PowerPoint strongly supported learning. Three out of six thought that the original materials did so.
- The content presented in the classroom emphasized what is important for students to demonstrate in the practical projects.
  - This finding was unexpected because, as compared to the original content, the new content had content specifically aimed at addressing each of the skills needed to solder and braze. Again, significant results were less likely because the sample size was small. Five out of five instructors thought that the new materials emphasized what is important, where three out of six thought that for the original materials.

- The content presented in the classroom provided the information that students needed to solder and braze effectively.
  - This finding was unanticipated because, as compared to the original content, the new content had content specifically aimed at addressing each of the skills needed to solder and braze. Similarly, significant results were less likely because the sample size was small. Five out of five instructors thought that the new materials provided the needed information, where three out of six felt the same way for the original materials.
- The marking template accurately reflected the importance of each item assessed.
  - This finding was unanticipated because a newly-designed rubric was created to more closely align with the skills performed than the rubric used with the original materials. The instructors thought favourably about both the new and the original rubric.

5.1. Implications

Instructional design and UDL attributes can be effectively incorporated into instructional materials. However, there might not be a significant difference between some attributes of the original and newly-designed materials due to similarities in the content and what the instructor does to help students learn the content.

The attributes that were embedded into the materials that were specifically aimed at supporting accessibility and inclusivity, can be designed into other instructional materials.

5.2. Limitations

The findings should be carefully generalized to other populations because the sample size was small. However, since principles of instructional design generally support all learners, it is reasonable to presume that the instructional design and UDL attributes that were embedded into the materials will be supported by other instructors.

5.3. Suggestions for further research

Similar research should be conducted with a larger population.
Similar research should be conducted in other fields of trades education.

References

Cawthorne, S. (2015). From the margins to the spotlight: Diverse deaf and hard of hearing student populations and standardized assessment accessibility. *American Annals of the Deaf 160*(4), 385-394.

Coolidge, A., Doner, S., & Robertson, T. (2015). *BC Open Textbook Accessibility Toolkit*. Retrieved January 9, 2018, from http://opentextbc.ca/accessibilitytoolkit/.

Fenrich, P., & Carson, T. (2017). Universal instructional design for accessibility and inclusivity: Supporting learners with challenges. *Proceedings of the International Conference on Education and New Developments, June 24-26, 2017, Lisbon, Portugal*.

Fenrich, P. (2015). *Evaluation of educational-software and paper-based resources for teaching logical-thinking skills to grade six and seven students* (Doctoral dissertation, Open University Malaysia, 2015).

Fenrich, P. (2014). *Practical principles of instructional design, media selection, and interface design with a focus on computer-based training/educational software*. Santa Rosa, CA: Informing Science Press.

Gagné, R., Briggs, L., & Wager, W. (1988). *Principles of instructional design* (3rd ed.). New York, NY: Holt, Rinehart and Winston.

Henry, S. (2017). Web Content Accessibility Guidelines. Retrieved January 9, 2018, from https://www.w3.org/WAI/intro/wcag.

Kennedy, M., Thomas, C., Meyer, J., Alves, K., & Lloyd, J., (2014). Using evidence based multimedia to improve vocabulary performance of adolecents with LD: A udl approach. *Learning Disability Quarterly 37*(2), 71-86.

Rao, K., Meo, G. (2016). Using universal design for learning to design standards-based lessons. Retrieved January 9, 2018, from http://journals.sagepub.com/doi/full/10.1177/2158244016680688.

Rao, K., Edelen-Smith, P., & Wailehua, C. (2015). Universal design for online courses: Applying principles to pedagogy. *Open Learning 30*(1), 35-52.

Rodriguez, E. (2009). *The use of blended learning to facilitate critical thinking in entry level occupational therapy students* (Doctoral dissertation, Capella University, 2009).

EFFECTING PEAK PERFORMANCE UNDER PRESSURE: MENTAL PRACTICES OF ELITE ATHLETES SUCCESSFULLY APPLIED IN TEACHER TRAINING

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Abstract

Techniques to relieve stress, reduce anxiety and control emotions are all-important for athletes to perform at optimal levels under massive amounts of pressure. This qualitative multiple-case study shows how teacher trainees can successfully use the same effective sports psychology techniques as elite athletes. They too must cope with competitive stress and extreme pressure during courses for teaching practice and assessment.

Findings show that teachers commonly reported over-stress and burn-out symptoms, even during short courses for experienced teachers. The predicaments of athletes – anxiety about pleasing fans and worry about them turning against them; wide broadcasts of their mistakes and personal lives, intimidating competition– can compare to the experience of teachers who must please parents, students, administrators and trainers, with varying demands, while under tight schedules, low pay, and little gratitude.

Noting the severe and urgent need for trainee stress management skills, the author introduced over five years six routine sports psychology techniques to minimize debilitating fear and reduce discouragement: Positive Self-talk; Imagery; Relaxation Exercises; Mental Rehearsal; Affirmations; and Self-image Analysis.

Among more than 500 trainees, just the first two of the six sports psychology techniques were seen to make overnight differences for those lacking self-confidence. One trainee nearly dropped out of the program before applying those two techniques so successfully that upon graduation, she received the top performance awards in all final tests. This paper posits that when teachers learn to manage their minds using well known (among athletes) sports psychology routines, they can also enjoy managing their classrooms, and their careers, with new vigour. The author recommends this simple and elegant approach for increased success in teacher training programs worldwide.

Keywords: Teacher training, confidence building, learning anxiety, sports psychology.

1. Introduction

Why do too many teachers and students, just as athletes, insist on making their work and studies more difficult by refusing to choose positivity, confidence, and success? And how can mental toughness and resilience transform learning? Tim Gallwey, author of the widely acclaimed sports psychology book *The Inner Game of Tennis,* was inspired to publish his findings on tennis students "getting in their own way," proposing solutions which changed paradigms in tennis instruction and the history of Applied Sports Psychology as well.

Professional teacher training programs for experienced teachers can be fraught, as trainees are faced first with unlearning outdated or ineffective practices, while taking on unfamiliar and possibly threatening new methods. Common reactions to the challenges of such programs are irrational resistance, high anxiety, difficulty coping, and breakdowns in concentration. Sports psychology techniques used in sport to avoid "choking" were implemented effectively in the Xinjiang program, proof of which came from a series of six reports evaluating teaching practice sessions by three different trainers.

Many of the troubled trainees in Xinjiang courses had already been familiar with Krashen's affective filter. His long-acknowledged study showed that high motivation, self-confidence, good self-image, and low anxiety really make a difference for language learners' success. Yet how can teachers who lack all four of these attributes be expected to convey them to their students? Thanks to sports psychology, they can learn three of them in a day or two and the fourth, Self-image Analysis, within a few weeks. The power of just two techniques, positive self-talk and imagery, can provide unexpectedly

high performance results which the author witnessed repeatedly from 2009 to 2014. Trainees became remarkably more attractive, empowered, and magnetic after applying these sports psychology practices to their training assignments.

2. Rationale

Natural reactions to overstress in language teaching practice, or in sports, rarely improve the situation: often, ill-advised coping mechanisms can aggravate and intensify stress, until important performance objectives become unreachable. Unmanaged pre-performance fear and nervousness become exaggerated through negative self-talk, and results can be just as undesirable as those self-fulfilling statements. In the Xinjiang teacher training program overstress was disruptive just as it is in sports; trainees were offered methods to prevent and manage that unpleasant experience, the goal being to keep one relaxed yet focused where high levels of performance are required.

3. Objective

After observing so much panic and fear during teacher training, the author knew from his personal athletic experience that sport psychology could handily assuage and subdue the nuisance and distraction of unnecessarily poor performance, through the transformation of attitude, self-confidence, and preferred approach to new challenges.

It also became evident that future students of these trainees would find no example for their own learning anxieties without the principles of *The Inner Game* and other sports psychology techniques. Table tennis provided a clear and convenient demonstration of the power of positive self-talk and the five other listed tactics used by elite athletes.

Table tennis, played on every campus in China, includes as many as 50 mistakes in about ten minutes. Negative self-talk concerning one's abilities, errors and weaknesses were detected both at table tennis and reflected also again next door in the teacher training academy. Remembering that negativity can impact performance negatively, the author asked trainee table tennis players if they'd be interested in improving their table tennis results by about five points in just one day. When this proved true, trainees were more open to using the same principle of self-talk in their language classrooms.

4. Methods

Although at first glance, sports psychology does not look generalizable, nevertheless a list 18 benefits of sports psychology will include 16 that are definitely applicable to life beyond sports, including language learning and teaching. This qualitative multi-case research began at table tennis and ended with world-class TKT scores. The author investigated teacher training success by interviewing trainees before and after they applied sports psychology to both a sport (table tennis) and to teacher training.

5. Discussion

Inadvisable mental habits can be easily diagnosed in campus game rooms, while the modeling of appropriate self-talk can be done in any recreational setting, then brought back to classrooms. Because the six techniques overlap and complement each other, quick and efficient improvements in mindset are manifest, often abruptly. Teacher training programs needn't be altered. Just one or two presentations and short reading assignments, then informal application of all six techniques in the student union game room can suffice.

One trainee from Hami, Xinjiang, had admirable table tennis skills, but her game changed for the worse if we started keeping score. In teacher training, she would burst into tears even if her observation feedback was positive. These problematic behaviors were extinguished when she began to understand how to use stress management strategies from sport psychology.

Another trainee, from Kashgar was competent as a teacher trainee but refused to accept the fact. She preferred to carry on with the kind of perfectionism that inhibits learning. In table tennis, she held equally inaccurate opinions of her playing skills. Condemning her adequate skills at the blackboard and at table tennis, she mistrusted positive feedback, lowering her performance levels significantly. Gradually eliminating negative statements, both written and spoken, changed her mind set and her performance.

A really dramatic example was a young kindergarten teacher from Yining who was so frightened of the course that she took off running out of the building and had to be fetched by her friends. She was so nervous and confused, she failed her first practice class abjectly. After she got hold of sports psychology

basics, she applied them to astonishing effect in the training course, and even introduced positive self-talk to her colleagues and students when she returned to her school. And she is also using table tennis to spread the ideas.

During informal follow-up, these trainees explained that applying the sports psychology concepts to their work was simple to achieve and endorsed by their students and administrators; their classes, featuring increased motivation, enthusiasm and effort, had become bright spots in their schools.

6. Conclusions

Sport Psychology has proven its practical usefulness to elite athletes who use its methods to perform at high levels over long periods. It provides well-researched techniques proven effective for the rigors of the sporting life. Simply using the same rituals and principles of elite athletic success for language teaching and language learning environments can provide similar results. Faith in oneself, resilience, mental preparation enthusiasm become possible for language teachers, students and trainees. One reason why trainee teachers may resist what's good for them and their students is a tendency to naturally build a negativity habit without being aware of the dangers of the resulting mindsets and how they are created, or understanding how confidence can erode and then the deficit be spread to others. This confirms the great need for sports psychology in education: learning English is never going to be easy, and teaching it is also demanding. It is clear that when teachers and trainees learn to apply sports psychology principles to their training and their jobs, mindsets can be changed along with the quality of the experience.

References

Dweck, C. (2017) *Mindset: Changing The Way You Think To Fulfil Your Potential* UK: Little, Brown Book Group
Gallwey, T. (2014) *The Inner Game of Tennis: The classic guide to the mental side of peak performance* UK: Pan McMillan
Krashen, S. (1985), *Language Acquisition and Language Education*, California, USA: Alemany Press
Nideffer, R. (1992) *Psyched to Win* Illinois, USA: Leisure Press
Williams, J. & Straub, B. "n.d." *Sport Psychology: Past Present and Future* Retrieved October 14, 2016, from http://slideplayer.com/slide/3595842/ slides 3 and 5

BATTLING ZERO-TOLERANCE IN SCHOOLS
AND THE SCHOOL-TO-PRISON PIPELINE

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Abstract

School uniforms in public schools, larger school security forces, hallway cameras, and metal detectors at school entrances, are part of zero-tolerance disciplinary policies criminalizing Black and Latino youth, alienating them from school, and feeding what has come to be known as the school-to-prison pipeline. Even young students are not exempt. Zero-tolerance disciplinary policies transform minor transgressions of school rules from educational opportunities into disciplinary matters where students are subject to suspension and involvement with police and courts. Zero-tolerance policies were implemented in schools despite research showing they were detrimental to student emotional and academic growth and reproduced the types of behavior they were intended to prevent. The push for zero-tolerance policies in schools and society was feed by media generated frenzy and racism and has disproportionately affected African American and Latino youth. While incarceration decimates families and communities, it is also a source of major revenue for private for-profit prison companies. The belief in the need for these policies has become virtually hegemonic in the United States in both White and minority communities. However, there have been cracks in the school-to-prison pipeline and challenges to zero-tolerance policies that point to change in the future. These include student campaigns, policy changes, and efforts by the Black Lives Matter movement.

Keywords: Schools, discipline, racism, criminalization, zero-tolerance.

1. Introduction

As educators and social justice advocates we challenge the inherent racism imbedded in the political, educational, and social system that produced zero-tolerance practices in schools and society and argue that, whether intended or not, these policies feed the school-to-prison pipeline. Many of these policies reflect the current state of corporate capitalism in the United States that have resulted in low taxes on the wealthy which contributes to under funded schools, outsourcing of public services to private business interests including the operation of schools and prisons for profit, and an increased focus on policing the poor. Moreover, as income gaps widen, there is less hope for upward mobility or social and legal justice. Pope Francis has repeatedly described unfettered capitalism as the "dung of the devil." He could just as well have been describing some of its component parts, especially zero-tolerance and the school-to-prison pipeline, a pipeline that must be severed.

Belief in zero-tolerance toward minor and even potential infractions as social and educational policy has become virtually hegemonic in the United States, including in both White and minority communities, but there are signs of hope that this will change. We are pleased that secondary school students in minority schools and communities across the nation have seized the momentum created by the Black Lives Matter movement to organize against zero-tolerance policies in their schools, including the New York metropolitan area where we are based. We view student activism on these issues as a major force in the struggle to humanize education in the United States and for smashing the school-to-prison pipeline. For example, on Friday, May 30, 2014, between sixty and eighty students at the Bronx Design and Construction Academy, a small public high school in New York City, refused to wear the school uniform and were blocked entry into the building by security guards. The students argued that the school's uniform policy coupled with metal detectors, hallway cameras, and a long list of restricted substances and equipment gave the school the feel of a penitentiary. They specifically targeted the school uniform policy because when they had applied to the school there was no mention of a uniform or dress code. We believe student experiences in these struggles have the potential to revitalize movements for progressive social change in the United States

One of the more highly publicized student responses to zero-tolerance policies in schools occurred on March 27, 2015 when high school students in Brooklyn, New York protested outside the John Jay Educational Complex where the day before a student was handcuffed and held in an office because school safety officers decided a pin holding together his broken glasses was a security threat. This protest received media attention, because of participation in the protest by the son of New York City Mayor, Bill de Blasio. Since 1998, security guards in New York City schools are a division of the police department. The guards, who report directly to police and not to school personnel, must have a high school diploma or GED®, be at least 21 years old, and receive fifteen weeks of training that narrowly focuses on penal laws and disciplinary codes. Starting salaries are about $32,000 a year or about $16 an hour. Poorly trained and underpaid security guards are prone to act inappropriately when challenged by students upset by conditions in their schools or problems in their lives.

Security forces in schools contribute to the sense that they are places for oppression and control rather than learning. According to the New York Civil Liberties Union (NYCLU), "At the start of the 2008-2009 school year there were 5,055 school safety agents (SSAs) and 191 police officers in New York City's public schools. These numbers would make the NYPD's School Safety Division the fifth largest police force in the country" (n.p.). New York City has twice as many SSAs per student than the city of Houston has police officers per citizen.

Another example of student resistance occurred at the Alfred E. Smith Career and Technical Education High School in the Bronx, where students launched a campaign to remove metal detectors from the entrance to their school. The students charged that "Metal detectors in schools contribute to the idea that Black and Latino teenagers should be treated like criminals" (Colley 2015: n.p.). A report published in 2013 by NYCLU estimated of the 100,000 students enrolled in schools with metal detectors, the vast majority of them are Black and Latino. New York City does not have an updated list of where metal detectors, first placed in schools in the 1980s and expanded in the 1990s, are located or guidelines why they are in some schools and not others (Pownall 2015:36).

These student protests were in response to what they considered intolerable school policies rooted in a narrow philosophy of education based on maximizing control and zero-tolerance for normal teenage behavior. Approximately 100,000 New York City school children, about ten percent of the school population, pass through a gauntlet of metal detectors every day. Their bags are searched and students are subjected to pat downs as if suspected of criminal behavior for simply going to school. Students are upset with the irrationality of the policies and the blatant racism. Students in schools with large Black and Latino populations were subject to the most searches.

2. Disparate impact doctrine

As academics we employ the legal doctrine of "disparate impact" outlined in Title VII of the Civil Rights Act of 1964 and applied as an analytic lens in Critical Race Theory (CRT), which starts with the assumption that racism is engrained in the fabric and system of American society, to challenge the legitimacy of zero-tolerance and the school-to-prison pipeline (Ladson-Billings and Tate 1995). The Civil Rights Act of 1964 enforced the "constitutional right to vote," provided "injunctive relief against discrimination in public accommodations," and authorized the United States Attorney General "to institute suits to protect constitutional rights in public facilities and public education" (U.S. Equal Opportunity Employment Commission n.d.). Disparate impact doctrine and Critical Race Theory both highlight the racial disparities in the application of zero-tolerance policies and in the school-to-prison pipeline and demand government officials either demonstrate the legitimacy of their actions or accept their racist implications.

In New York City, with a Black and Latino student population of over 80%, Mayor Rudolph Giuliani transferred control over the school safety program in 1996 away from school officials to the police department, a policy decision that remains in effect. This shift meant that school disciplinary codes in largely minority schools went from being educational concerns addressed by teachers and counselors to criminal matters handled by security guards responsible to the police department. Semi-skilled low paid school safety officers now decided when student behavior was criminal and warranted police intervention rather than teachers, guidance counselors, or school administrators. Principals or teachers who questioned these decisions and intervened were themselves subject to arrest. Although there were severe financial restraints on schools, between 2002 and 2009 New York City's budget for police and security equipment in schools increased by sixty-five percent to more than $221 million (NYCLU n.d).

. We maintain that addressing minority students and schools with overwhelmingly Black and Latino populations as police problems is essentially a knee-jerk and racist reaction to White fears in an effort to keep the small number of White students, approximately 15%, in the public school system. In addition, this shift to a regular police presence in schools with a chain of command independent of school

personnel created potential due process issues. Students could be arrested and enter the criminal justice system because of an incident that took place in school and then face another round of school disciplinary hearings when they return to school or they could be absolved in one arena and punished in the other.

The push for school uniforms, larger school security forces, hallway cameras, and metal detectors at school entrances, were part of "zero-tolerance" disciplinary policies criminalizing Black and Latino youth, alienating them from school, and feeding what has come to be known as the school-to-prison pipeline (Alexander 2013). The treatment of students as potential criminals in United States schools is definitely not a new phenomenon. However, as a result of zero-tolerance policies the repression of students became more systematic during the last three decades.

3. Origin of zero-tolerance

The ideas behind and a justification for "zero-tolerance" by police of minor infractions was popularized by conservative writers James Q. Wilson and George L. Kelling in a 1982 article on "Broken Windows" (Wilson and Kelling 1982). Essentially Wilson and Kelling, who claimed to have accompanied police officers patrolling crime-ridden inner-city neighborhoods, argued that if police stopped minor anti-social behavior before it escalated into serious criminal infractions, it would lower crime rates and make neighborhoods safer. Their "Broken Window" metaphor was some sort of new second law of community thermodynamics. If a broken window in a building is left unrepaired vandals and squatters will soon wreck it completely and it is a slippery downhill slope toward eventual and total community chaos. "Broken Window" was used to justify giving police carte blanche authority, especially in urban minority communities, to stop, frisk, and arrest young Black and Latino men.

As a result of zero-tolerance policies the United States prison population quadrupled since the 1970s to 2.2 million people; the largest prison population in the world. Approximately 65 million people in the United States, or more than twenty-five percent of the adult population, has a criminal record (National Association of Criminal Defense Lawyers 2014: 22). More than half of the prisoners in state facilities are in jail for nonviolent crimes. Mass incarceration has destructive impact on families, communities, and state and local budgets. It cost $80 billion a year to keep all these people in prison and more than $250 billion to pay for all the additional police and court expenses (*New York Times*, 2014). According to the human rights group Human Rights Watch (2011), while prison should be a last resort, yet in the United States "it has been treated as the medicine that cures all ills" (8).

4. Zero-tolerance in schools

Zero-tolerance policies started to be routinely enforced in public schools after federal legislation, the Gun-Free Schools Act (1994), required states to expel students who brought a firearm to school (U.S. Department of Education 1995). The Gun-Free Schools legislation created a punitive accountability measure that required states to implement the policy or face losing federal education funds. A 1999 online article in *USA Today* estimated that 87% of all schools in the United States had instituted zero-tolerance policies for drug possession and 91% for weapons, but according to the article, implementation of zero-tolerance policies varied widely from school-to-school and district-to-district (Cauchon 1999).

Schools and districts applied zero-tolerance standards for student "misconduct" for possession of any type of potential or imagined weapon and drugs, including prescription or over-the-counter medications. A range of previously tolerated misbehaviors soon became grounds for severe disciplinary action including expulsion as zero-tolerance policies and practices were employed inexplicably.

What's more, zero-tolerance policies were implemented in schools despite research showing that resultant suspensions were detrimental to both a student's emotional and academic growth. According to a 2006 study sponsored by the American Psychological Association, school violence was not on the rise when the zero-tolerance policies were implemented, discipline and suspension rates varied widely nationwide, suspension rates increased primarily because of the time schools spent on disciplinary matters; and suspension rates negatively affected academic achievement (Skiba *et al* 2006).

Instead of reducing reported student disciplinary misconduct, zero-tolerance policies in schools had the opposite effect as the number of student violations, especially by African-American and Latino students increased. In New York City, between 1998 and 2007 the number of zero-tolerance infractions rose from seven to twenty-nine. This resulted in the doubling of suspensions between 2002 and 2008. In 2008-2009 almost 75,000 New York City students were suspended compared to a approximately 43,000 in 1999-2000, an increase of almost 60%. Under pressure to reduce school suspensions, the number of suspendable infractions was reduced to twenty-one in 2011, which was still three times the 1998 number (Santos 2011; Miller *et al* 2011).

The punitive results of zero-tolerance policies were also evident in elementary schools where younger children and their families were being prepared for entry into the school-to-prison pipeline. In New York City, the suspension of elementary school students between the ages of 4 and 10 was up over 75% percent between 2001 and 2010. During academic year 2008-2009 school year there were 6,119 school suspensions compared to 3,469 in 2002-2003. In 2010-2011, 1 in every 14 New York City public school students was suspended compared to 1 out of 25 students ten years earlier (Mandelkern 2011).

5. Police in schools

The zero-tolerance of student misbehavior, especially the supposed epidemic of misbehavior by Black and Latino students, in effect means police intrusion in school discipline and public tolerance of a nationwide epidemic of abusive actions directed toward children. Incidents of police action leading to the abuse of students, particularly Black and Latino students, are regularly reported on in the media. In October 2015 a sixteen-year old Black female student in Columbia, South Carolina, was ripped from her chair, thrown to the floor, dragged across the room, and handcuffed by a school-based police officer after she used a cellphone in class. Although the police officer in the South Carolina incident was dismissed, repeated incidents such as the one described in this essay, point to a system of abuse, as opposed to the random behavior of a rogue individual. These incidents have become are approaching normal practice.

6. Conclusion

There are a series of interconnections that link zero-tolerance policies and the school-to-prison pipeline. The application of zero-tolerance policies in schools acculturates Black and Latino young men into a penal-like system based on subordinate positioning. In this system insubordination to authority, whether legitimate or illegitimate, escalates minor violations of rules into major offenses accompanied by severe punishment. This disciplinary process essentially disposes of *due process* preparing young Black and Latino men for similar practices by police.

According to Donna Lieberman (2008) of the New York Civil Liberties Union, "The School to Prison Pipeline operates directly and indirectly. Schools directly send students into the pipeline through zero-tolerance policies that involve the police in minor incidents, which too often lead to arrests, juvenile detention referrals, and even incarceration. Schools indirectly push students into the criminal justice system by excluding them from school through suspension, expulsion, discouragement and high stakes testing requirements." In addition, "Inequities in areas such as school discipline, policing practices, and high-stakes testing" which "disproportionately impact "youth of color and youth with disabilities" feed these young people into the pipeline (Lieberman 2008: n.p.).

New York Times columnist Charles Blow regularly details the way zero-tolerance in schools and society in general disproportionately impacted on Black male youth, essentially feeding them directly into the school-to-prison pipeline. In a 2014 essay on *Michael Brown and Black Men* (Blow 2014: A23), Blow cited a 2010 report by the Southern Poverty Law Center (Losen and Skiba 2010) that found suspension rates for Black male students in eighteen of the largest school districts in the United States was more than double suspension rates for other students. In the same article Blow compared high school graduation rates for Black and White male students and not surprisingly found they were similarly disproportionate – only about half of Black male high school students graduate on time. Blow also reported on a Brookings Institution study (Kearney and Harris 2014) that found "There is nearly a 70 percent chance that an African American man without a high school diploma will be imprisoned by his mid-thirties" (8). Blow concluded, "The bias of the educational system bleeds easily into the bias of the criminal justice system — from cops to courts to correctional facilities. The school-to-prison pipeline is complete" (Blow 2014: A23).

References

Alexander, M. (2013). *The new Jim Crow: Mass incarceration in the age of color blindness*. New York, NY: The New Press.
Blow, C. (2014, August 14). Michael Brown and Black Men. *The New York Times*, A23.
Cauchon, D. (1999, April 13). Zero-tolerance policies lack flexibility. *USA Today*. Retrieved on September 3, 2015 from http://usatoday30.usatoday.com/educate/ednews3.htm
Colley, E. (2015, May 19). Metal detectors: To have or not to have? *Insideschools*. Retrieved on August 23, 2015 from http://insideschools.org/blog/item/1000993-metal-detectors-to-have-or-not-to-have.
Human Rights Watch (2011). *A nation behind bars: A human rights solution*. Human Rights Watch.

Kearney, M. & Harris, B. (2014, May 1). Ten economic facts about crime and incarceration in the United States. *Brookings Institute Report*.

Ladson-Billings, G. & Tate, W. (1995, Fall). Toward a critical race theory of education. *Teachers College Record, 97*(1), 47-68.

Lieberman, D. (2008, January 23). *The impact of school suspensions, and a demand for passage of the student safety act*. New York, NY: New York Civil Liberties Union.

Losen, D. & Skiba, R. (2010) *Suspended education, urban middle schools in crisis*. Montgomery, AL: Southern Poverty Law Center.

Mandelkern, M. (2011, April 1). As school suspensions soar, many seek a different approach. *Gotham Gazette*.

Miller, J., Ofer, U., Artz, A., Bahl, T., Foster, T., Phenix, D., Sheehan, N. & Thomas, H. (2011, January). *Education interrupted: The growing use of suspension in New York City's public schools*. New York, NY: New York Civil Liberties Union.

National Association of Criminal Defense Lawyers (2014, May). *Collateral Damage: America's Failure to Forgive or Forget in the War on Crime*. Asbury Park, NJ: National Association of Criminal Defense Lawyers.

New York Times (2014, May 25). End mass incarceration now. *The New York Times*.

NYCLU (n.d.). *A look at school safety: School to prison pipeline*. New York, NY: New York Civil Liberties Union. Retrieved on August 23, 2015 from http://www.nyclu.org/schooltoprison/lookatsafety.

Pownall, S. (2013, October). *A, B, C, D, STPP: How school discipline feeds the school-to-prison pipeline*. New York, NY: New York Civil Liberties Union.

Santos, F. (2011, January 28). Sharp rise in suspension at city's schools is cited. *The New York Times*, A29.

Skiba, R., Reynolds, C., Graham, S., Sheras, P., Close Conoley, J., & Garcia-Vazquez, E. (2006, August). Are zero tolerance policies effective in the schools? An evidentiary review and recommendations. *American Psychological Association Zero Tolerance Task Force*.

U.S. Department of Education (1995, October 31). *Guidance concerning state and local responsibilities under the Gun-Free Schools Act of 1994*. Washington, DC: United States Department of Education.

U.S. Equal Opportunity Employment Commission (n.d). *Title VII of the Civil Rights Act of 1964*. Washington DC: U.S. Equal Opportunity Employment Commission. Retrieved on September 23, 2015 from http://www.eeoc.gov/laws/statutes/titlevii.cfm.

Wilson, J. Q. & Kelling, G. (1982, March). Broken windows. *Atlantic Monthly*.

DIFFERENTIATE TO INCLUDE. AN EXAMPLE OF DIDACTIC INTERVENTION IN A LOWER SECONDARY CLASSROOM

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Abstract

The creation of meaningful learning situations across the classroom is one of the goals that teachers of every school level seek to target. School reality in its complexity presents to teachers great challenges in terms of adapting their teaching to the "daily educational needs" of each student. The paper moving from a reflection on the construct of school inclusion will focus on teaching strategies useful to define a classroom as inclusive. In particular, the attention will move to the didactic differentiation, a strategy that, according to the recent pedagogical literature, can be useful to meet the specific educational needs of every student from the pupil with difficulty to the gifted pupil. Within a variety of methodologies available to the teacher, differentiation aims to cover the wide spectrum of situations that may occur in the classroom trying to foster every child's potential. The paper will conclude with an example of a good educational practice in an Italian middle school. A specific didactic unit will be illustrated and the limits and advantages of this approach within the Italian context according to teachers' perspective will be discussed.

Keywords: Inclusion, differentiation, giftedness, didactics, classroom.

1. Introduction

An increasing number of students today suffer from an educational approach that seems no longer able "to guarantee the conditions to live peacefully their own path of growth and education" (d'Alonzo, 2016, p.42). In particular some gifted students are often described in the literature as underachievers (Butler, 1983, Betts & Nehiart, 1988) because they do not find at school learning experiences that are challenging and suit their cognitive and creative potential. Good inclusive didactics seek to achieve learning and full participation for all pupils. Inclusive didactics are based on these main elements: "different human functioning, equity, technical effectiveness and full social participation" (Ianes, Cramerotti, 2013, p.19). These guidelines are most important for underachievers students to avoid not just a school failure oppositional-provocative attitudes (Del Siegle, McCoach 2017).

In an inclusive classroom differences are enhanced and teachers didactics meet the particular functioning of every students, "through training offers that are truly capable of developing the maximum of their learning potential, but realized in the natural context of a good social participation and full belonging to collective situations" (ibidem). An inclusive methodological perspective is differentiation, that, according to d'Alonzo is "capable of promoting meaningful learning processes for all the students present in the classroom, aimed at proposing targeted educational education activities, designed to meet the needs of individuals in a climate educational in which it is customary to tackle the didactic work in different ways" (d'Alonzo, 2016, p.47). The perspective of differentiation is also indicate by UNESCO as dimension and concepts to be considerate in an inclusive review framework (UNESCO, 2017, p.39).

The principle of personalization is based on the principle of differentiation of educational programs aimed, on the one hand, to reduce school failure and the other to promote excellence (Ianes, Cramerotti, 2013, p.75). Didactic differentiation could refers to work for groups of students within the same class; work for groups of students between classroom; individual support activities; laboratories created within the classroom and organized for level groups; network learning activities (ibidem). As regards specific instruments for gifted students acceleration, compacting curriculum and enrichment activities inside the classroom are also part of this methodological perspective.

Within differentiation methodology the creation of homogeneus groups is one cooperative activity that teachers could use to deepening specific topics, where students have time to explore more a math task issue or a human, scientific problem. In homogenous groups, the needs of gifted children to be

committed in an activity, to socialize and respect other ideas and to share meaningful significant experiences with people with same interests (but different personality), can be served also in mainstream classrooms (French & Shore, 2009). In this article we will present a specific classroom activity in an Italian mainstream school based on the principles of differentiation, its design and implementation. Critical points also will be discussed.

2. Design

The activities inside the classrooms were designed following the "Enrichment triad model" (Renzulli, 1977) in order to help students to move from being knowledge consumers to new knowledge producers. The model offers three categories of experiences: the first concerns exploration activities in general (type I enrichment); the second enrichment category (type II) consists of group activities; the latter (type III) aims to provide students with opportunities to become real-life investigators through the use of appropriate tools of investigation and to present their findings publicly. In this project, Gifted students were grouped according to their ability (potential). It is important to remember that just because students are gifted, they are not necessarily performing at a level equal to their abilities and competencies or rather they underachieve and perform at a level below to their abilities without reaching their full potential. The activity we will present is part of PhD project in which 4 medium school classrooms, 95 students (53M e 42F) and three teachers were involved. In this contribute we will present one activity in the subject of Art that was carried out in one classroom.

3. Objectives

In the action research proposed we want to establish if we could differentiate the activity in the classroom maintaining the basic principles of inclusion. An inclusive activity promotes and fosters the potential of each student in the classroom, from the child with disability to the gifted students. In an inclusive classroom every student has the opportunity to be involved in challenging tasks that present a level of difficulty that is optimal.

4. Methods

We carried out an action research in the classroom and through field-notes, observations, students questionnaire and teachers interview we wanted to explore if the specific methodology of differentiation helps every student in the classroom. The action research in the classrooms was divided into 4 phases:
- Phase 1: The teacher and the educational researcher divided students in groups in order to create homogenous competency groups related to specific disciplinary objectives. There were 4-6 groups of students in each classroom. - Phase 2: The teacher and the educational researcher planned the activity together and evaluated if the activity was too difficult or too easy for each Group. - Phase 3: Activity in the classroom. - Phase 4: Group and Individual Assessment.

In this contribute we want to present a didactic unit of Art developed in a mainstream classroom.

24 students of 11-13 years old participated in the activity (13 M and 11 F). In this classroom there were two students, one female and one male, identificated as gifted/high achievers. The planning of the activity lasted two weeks and the educational researcher and the teacher organized the didactic unit differentiating it for levels of difficulties. In this classroom the topic of the unit was "the simmetry".

4.1. Phase I
After receiving the evaluation through the Renzulli Scales for Rating the Behavioral Characteristics of Superior Student (Renzulli et al., 2010), the Test of Intellectual Potential (Fabio, 2007) and the William test of Divergent Thinking (Williams, 2004), students were divided according to their learning potential and Creativity scores and not just to their performance or marks in the art subject. For example a student with a score of 6 in Art, but with the Intellectual Learning Potential of more than 59 and with a score on the Creativity Test above the threshold value was in the same group of students with high marks on Art. In classroom 3 four groups were created and each group had the same competences to achieve:

Academic Skills
1. Express and communicate (competences a-b)
2. Observe and read the pictures (competences c-d-e)
3. Understand and appreciate artwork (competences d-e)

a)   Realize creative elaborations;
b)   Understand the elements of visual language;
c)   Read the most significant works produced in art;
d)   Recognize the main elements of cultural, artistic and environmental heritage;
e)   Analyze and Describe;

Transversal Skills

1. Knowing how to communicate (understand and represent) effectively, consistently and correctly, using various types of languages, depending on the context and the purpose.

2. Knowing how to manage complex communication moments, in a situation, taking into account emotional, way of being, and the internalization of knowledge.

3. Knowing how to listen, negotiate, share, while respecting the roles and tasks and rules of coexistence, valuing and supporting individual potential.

4. Knowing how to draw a work path (knowledge and skills), identifying shared goals and common products.

5. Planning action strategies and verifying the results achieved, by distinguishing between the more and less effective.

4.2. Phase II

After two weeks of meetings the unit was planned as follows:
1. Frontal Lesson on Symmetry and Rhythm (2 hours);
2. Experimenting the rule within the group (Group Work: 2 hours)
3. Task: Creating Modular Compositions (Group Work: 2 hours);

In the creation of modular compositions each group had the same basic task to start. After finishing the compulsory task, every group could advance and accomplish a more difficult task (Fig.1).
- Group A1 Compulsory task 1-2-3
- Group B1 Compulsory task 1-2
- Group B2 Compulsory task 1-2
- Group C Compulsory task 1

Figure 1. Samples of Modular Compositions presented to the students in a crescent level of difficulty.
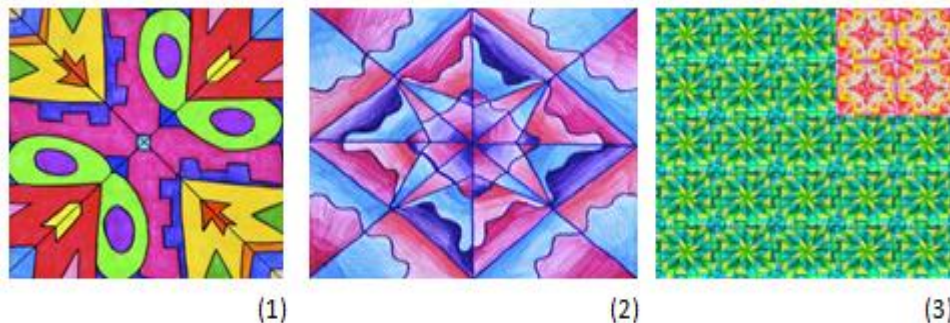
4.3. Phase III

The activity in the classroom lasted 5 hours. According to the art teacher the choice to work in group and the possibility to share information within it, let the group save time. The same activity was, effectively, carried out in a traditional way, with the same teacher in another classroom. According to him the other classroom spent much more time in completing only task 1.

4.4. Phase IV

At the end of the group activity an individual and group evaluation was carried out. The group evaluation consisted in an explanation of the work to the whole classroom through a power point presentation. During the presentation of the works the researcher and the teacher evaluated each student using a specifically designed grid of competencies and taking into account the whole performance of the students since the beginning of the activities. The competency grid was based on evidence gathered through assessment tests, direct observation of children during complex art activities, and direct interaction with the teacher and peers. In the figure below is shown a pattern created by the group with a gifted student.

5. Results

Every student in the classroom achieved a good score the in the final mark. It is important to highlight that children of the Group C (children with difficulties in art tasks and a girl with mild mental delay) finished task 1 and wanted to work on task 2. The teacher in fact had more time to follow this group and leave sometimes the others group to work alone. According to the teachers interview, the difficulty in the group (especially gifted pupils) was the lack of cooperation in finding solutions to data problems. In fact, the pupils were often autonomous but uncooperative. For this reason the main role of the teacher in this group was to foster the collaboration and social sharing within the members in order to create a shared pattern of images (Figure 2).

Figure 2. Pattern created by group C1.

The base group has highlighted a peculiarity: students who usually hide themselves behind the classmates, in this specific group activity they have emerged, they organized the activity in the group and share their skills with their classmates. The role of the teacher in this case was to foster their disciplinary competencies on the activities accompanying them gradually to the solution of the problems. These types of activities can be replicated according to all teachers both as a deepening activity at the end of a didactic unit as well as for introducing new topics. However, according to all three teachers who participated in a shared interview, these activities were possible thanks to the support of an external expert professional specialized in education that supported the school in the identification of the potential of each pupils, trained the teachers in the use of specific scales for the identification of giftedness (Renzulli, 2010) and supervised them in the field of giftedness, freeing them from a disciplinary approach to the subject. According to the teachers the application of this methodology is useful to foster the potential of every student from the child with difficulties or learning problems to the gifted student. According to the teachers this methodology offers the possibility to work to the wide complexity present in the classroom paying attention to every special educational needs that emerges.

6. Conclusions

The activity that we presented in this contribute was part of a bigger didactic intervention carried out in 4 different middle school classrooms in a province of Lecce in South Italy. We reported in this contribute only one of the experience and the results obtained in the classroom. Our first objective was to evaluate if a differentiated methodology could promote an inclusive classroom climate where each student has the possibility to test and experience more challenging activities graded to their level of starting. The idea was to work on the zone of proximal development (Vygotsky, 1978) of each student in the classroom giving them different structured and guided tasks. The observations in the classroom, teachers interviews and student questionnaire showed that a careful planning of the activity is needed if the teacher want to propose challenging and inclusive activities for the whole classroom. Teachers also need to be trained in the identification of gifted student and have to organize also opportunities for gifted students to experience activities with similar competence group. Although homogeneous groups can create more competitiveness within the group (an element that can be kept under control by the teacher) on the other hand, homogeneous groups offer the gifted student situations in which he cannot prevail in the group, not act as a teacher of other students (Coleman and Gallagher, 1995), and must necessarily share with others their ideas and thoughts for the solution of a problem. Through this methodology teachers offer learning experience that can arouse enthusiasm (ivi, p.380), motivation and task commitment in students.

Finally differentiation, and in particular homogeneous grouping, if well organized, can support teachers in using class time in a more efficient way and consequently students can receive more support from the teacher. For all these reasons differentiation seems to be a methodological approach that support each student in the classroom, confirming its inclusive nature. In conclusion, didactic differentiation does not only mean homogeneous groups but also learning experiences more heterogeneous and diversified within the class and which therefore foresee the implementation of homogeneous groups for specific objectives. The teacher's flexibility is to use homogeneous and heterogeneous groups according to the objectives he wants to achieve. Only if differentiation becomes an *habit* in teachers' practice, it can be defined a versatile and inclusive methodology, that is supportive for every student in the classroom.

References

Betts, G. T. & Neihart, M. (1988). Profiles of the gifted and talented. *Gifted Child Quarterly*, 32(2), 248-253. http://dx.doi.org/10.1177/001698628803200202

Butler-Por, N. (1987). *Underachievers in school: Issues and intervention*. Chichester, England: Wiley.

Butler-Por, N. (1993). Underachieving gifted students. In K. A. Heller, F. J. Monks, & A. H. Passow (Eds.), *International handbook of research and development of giftedness and talent* (pp. 649–668). Oxford, England: Pergamon.

Coleman, M. R., Gallagher, J. J. (1995). The successful blending of gifted education with middle schools and cooperative learning: Two studies. *Journal for the Education of the Gifted*, 18, 362–384

D' Alonzo, L. (2016). *La differenziazione didattica per l'inclusione. Metodi, strategie, attività*. Erickson. Trento.

Fabio, R. A. (2007). *TIP. Test d'intelligenza potenziale*. Gardolo-Trento, Italy: Erickson.

French, L. R., Shore, B. M. (2009). A reconsideration of the widely held conviction that gifted students prefer to work alone. Invited chapter in Hymer, B., Balchin, T. D., Matthews, D. (Eds.), *The Routledge international companion to gifted education* (pp. 176–182). London, England: Routledge

Ianes, D., Cramerotti S. (2013). *Alunni con Bisogni educativi speciali. Indicazioni operative per promuovere l'inclusione scolastica sulla base della DM del 27/12/2012 e della CM n.8 6/3/2013*. Erickson: Trento

Ianes, D. (2015). Passi verso la didattica inclusiva. In *H. Demo (a cura di), Didattica delle differenze. Proposte metodologiche per una classe inclusiva*. Trento, Erickson.

Renzulli, J. S., Smith, L. H., White, A. J., Callahan, C. M. Hartman, R. K., & Westberg, K. W., Gavin, M. K., Reis, S. M., Siegle, D., & Systma Reed, R. E. (2010). *Scales for Rating the Behavioral Characteristics of Superior Student: Technical and administration manual (3rd ed.)*. Mansfield Center, CT: Creative Learning Press, Inc.

Renzulli, J. (2001). *Enriching Curriculum for All Students Arlington Heights, Ill.*: SkyLight Professional Development.

Renzulli, J. S., & Reis, S. M. (1985). *The schoolwide enrichment model: A comprehensive plan for educational excellence*. Mansfield Center, CT: Creative Learning Press.

UNESCO. (2017). *A guide for ensuring inclusion and equity in education*. Policy Guidlines.

Vygotsky, L. S. (1978). *Mind in Society: the Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Williams, F. E. (1994). *TCD. Test della creatività e del pensiero divergente*. Centro Studi Erickson

HOW VET TEACHERS IN HUNGARIAN VET SCHOOLS CONCEPTUALISE THEIR OWN PROFESSIONAL DEVELOPMENT

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Abstract

The subject of our study is the continuous professional development (CPD) of VET teachers and trainers working in upper-secondary VET schools in Hungary. In line with the transformation of the concept in the past decades, we understand teachers' CPD as their continuous, lifelong learning, which is grounded in social settings and embedded in schools (*Putnam and Borko 2000, Sleegers et al. 2005, Scheerens 2010*). Research on teachers' CPD has so far focused on teachers working in general education and the professional learning of VET teachers - which is based on characteristically different system, organizational and individual level factors and development needs - is a rather under-investigated area (*Parsons et al., 2009, Cedefop, 2010, Fejes-Köpsén 2014, Koski-Heikkinen et al. 2014*).

The empirical basis of our investigations is the analyses of documents prepared by VET teachers who took part in a 2015 pilot project as first applicants to the new 'master teacher' category of the recently introduced teacher career system. Teachers who wish to obtain the title of 'master teacher' and a salary increase have to prepare a 'master programme' that they will implement in the next five years, thus contributing to the improvement of their school or wider environment and thus the effectiveness of the education system. Applicants have to submit an analysis of their professional career as well, detailing the path, context and outcomes of their own professional development. Our main research question is: How do these VET teachers conceptualise their own continuous professional development in the design of their master programme and in the analysis of their own professional career?

Our research method is the content analysis of these two types of documents. The coding of the 'master programmes' was carried out by a research team at ELTE University[1], using a coding system based on concepts and variables employed in OECD's TALIS and a previous large-scale national teacher survey. The database includes 813 master programmes, 202 of which were prepared by teachers working in VET schools, including 67 VET teachers. The professional career documents were analysed by using a content analysis software. Quantitative data obtained is analysed using the SPSS software and applying descriptive statistical methods and multi-variant analysis (correlation and regression analysis). Our initial results show that the focus of VET teachers' CPD is on the formal aspects of their teaching work (curriculum, teaching material development) and they pay less attention to the pedagogical aspects.

Keywords: Continuous professional development, teacher learning, vocational education and training, life history.

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[1] The research project is titled 'Impact of the activities of master and scholar teachers on the improvement of school education', led by Dr. Judit Szivák.

DEVELOPING A UNIVERSAL TALENT SCORE TO ASSESS TEACHERS' TALENT IN HIGHER EDUCATION

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Abstract

The Universal Talent Score (UTS) is a newly developed talent metric that acts as an indicator of the competence and value-creating capacity of an employee – even prior to recruitment. The results of the UTS may be used to optimize performance and place the right talent in the right place. The calculated score may help employers in workforce planning as well as in all the human resources functions of recruiting, onboarding, training, and succession planning. Although the need for talent is universal across all industries, it becomes very specific as we zoom in onto particular job functions. In other words, the magic recipe to become a successful civil engineer is not the same as that of a successful project manager, software developer, or teacher. Although some ingredients are surely common, others are specific to one recipe and not the other. In its new updated version, The Universal Talent Score now comprises of four specific assessments to measure the degree of talent available or required by potential recruits or existing employees who are teachers, project managers, civil engineers, and software developers in order to succeed in their roles. The research in this paper specifically focuses on using the tool to assess the talent of teachers in higher education. Let's Measure Talent to Manage It!

Keywords: Talent management, talent measurement, education, talent score, human resources.

1. Introduction

In organizations, talent is made up of employees who can make a positive difference to business performance either through their direct contribution or by demonstrating the highest levels of potential over time. Today, the success of organizations greatly hinges upon the caliber of the talent they possess. One of the main objectives of talent management is to develop high potential employees across all levels of the organization for future leadership roles. Another is allowing the organization to attract highly qualified external resources while retaining its existing employees with significant potential (Christie, 2005). One would suppose that in today's knowledge economy, the ultimate producers of knowledge, higher education institutions, would value talent management and even have a competitive edge in that domain (Lynch, 2007). However, the hard truth is that research has shown that, in general, high schools, colleges and universities all around the world fall short of businesses and industries in developing their own talent (Lynch, 2007). It is also interesting to note that most of those educational institutions perform well in developing their students and getting them ready for the workplace, but are not as successful in establishing formal programming to support and develop their managerial and academic staff. In his work, Clunies stated that higher education has historically been sluggish to adopt many corporate management processes (2007). Furthermore, Heuer believed that the notion of talent management in higher education is a realm that continues to remain mostly unknown (2003).

Global forces are redesigning a new landscape for both human resource management and talent management. HR departments all around the world have begun to make serious investments in collecting and analyzing data to make people decisions. The Universal Talent Score (UTS) presented in this article is a talent index that acts as an indicator of the competence and value-creating capacity of an employee – even prior to recruitment. The calculated score will help employers in workforce planning as well as in all the human resource functions of recruiting, onboarding, training, and succession planning. The 'datafication' of talent management via metrics such as the UTS gives human resources professionals access to real cross-organizational employee data for the first time. Placing data at the heart of talent management processes allows them to manage talent in the same manner they manage other assets. Because the true wealth of an organization is in its people, measuring talent is therefore very important (Abi Abdallah, 2016).

2. Design

The Universal Talent score is based on a talent scorecard which is a measurement and management framework linked to the talent strategy of an organization that tracks and guides actions in support of acquiring, developing and retaining critical organizational talent. It allows managers and decision-makers to get a 'quick read' on an employee's present situation and helps determine where action must be taken to ensure that the organization meets its desired talent and business goals (Abi Abdallah, 2017).

Extensive research has been made on the top talents, skills, and qualifications that are sought by higher education institutions and that are needed to succeed in today's challenging and dynamic world of academia. The latter have been narrowed down and populated into a list of 75 parameters that have been allocated to the four different "dimensions" of the talent scorecard as is shown in Table 1. Based on the scorecard valuation methods used to evaluate intellectual capital, the talent scorecard has been created by identifying four dimensions which are *performance*, *potential*, *personality*, and *qualifications*.

Table 1. The Parameters of the Universal Talent Score.

PERFORMANCE	POTENTIAL	PERSONALITY	QUALIFICATIONS
1. Adaptability	1. Achievement Drive	1. Accountability	1. Achievement Awards
2. Analytical/Reasoning	2. Conflict Resolution	2. Amiability	2. Communication Skills
3. Competition	3. Creativity	3. Anger Management	3. Computer / IT Skills
4. Connectedness	4. Decision making	4. Command	4. Education / Degrees
5. Consistency	5. Dependability	5. Dedication	5. Industry Awareness
6. Critical Thinking	6. Development	6. Emotional Intelligence	6. Languages
7. Discipline	7. Effectiveness	7. Empathy	7. Leadership Position (Held)
8. Executive	8. Entrepreneurial	8. Honesty	8. Numeracy Skills
9. Flexibility	9. Futuristic	9. Integrity	9. Professional Appearance
10. Focus	10. Ideation	10. Intellection	
11. Multitasking	11. Individualization	11. Leadership	10. Professional Certificates
12. Optimization	12. Initiative Taking	12. Loyalty	11. Professional Memberships
13. Organizing	13. Maximization	13. Multicultural Awareness	12. Special Trainings
14. Planning	14. Negotiation	14. Politeness	13. Technical Skills (Industry-related)
15. Presentation	15. Passion	15. Positive Attitude	14. Volunteer Work
16. Problem Solving	16. Premeditation	16. Self-Confidence	15. Work Experience (industry-related)
17. Professionalism	17. Research Skills	17. Self-Image	
18. Sales Skills	18. Strategic Planning	18. Self-Motivation	
19. Teamwork	19. Tenacity	19. Significance	
20. Time Management	20. Willingness to Learn	20. Stress Management	

First, the performance dimension describes whether the employee has what it takes to adequately perform the functions of his/her job. Second, the potential dimension describes [and predicts] the extent to which the employee has the capacity to develop and move on along his/her career path. Third, the personality dimension investigates whether the employee has the right mix of personal characteristics that help him/her succeed in today's dynamic and challenging workplace. Finally, fourth, the qualifications perspective examines whether the employee has sufficient credentials such as experience, education, training... The information obtained from these four dimensions creates a holistic picture of an employee's talents, strengths, aptitudes, and qualifications all of which contribute to his/her universal talent score.

The Universal Talent Score assessment is a series of 150 descriptors of talents, skills, and qualifications. To obtain the score, a respondent has to decide to what extent does he/she agree or disagree with each statement [totally disagree, moderately disagree, undecided, moderately agree, or totally agree]. The "totally disagree" answer gets zero points. The "moderately agree" answer gets one point. The "undecided" answer gets zero points as well since it renders the question nil. The "moderately agree" answer gets two points, and the "totally agree" response gets three points. Those are multiplied by respective weights and then summed up into the Universal Talent Score result (Abi Abdallah, 2016). The weights attributed to each of the 75 parameters were obtained using a Delphi study technique whereby a professional/expert opinion was sought from seven esteemed higher education professionals from all around the world. Consequently, once consensus was achieved, the agreed-upon weights have been adopted and migrated into the UTS assessment tool (Abi Abdallah, 2017).

In order to increase objectivity as much as possible and to narrow down the margin of error, the Universal Talent Score Assessment is timed. Respondents have only 15 seconds to make each choice because research and experience have shown that the first instinctive answer is always the most truthful one. As such, the respondent doesn't have much time to ponder which answer serves his/her interests best so the obtained answers become as objective and accurate as possible.

3. Objectives

Today, the success of higher education institutions greatly depends on the caliber of the talent they possess. The UTS assessment results in a talent metric that acts as an indicator of an employee's capabilities, skills, potential, and qualifications pertaining to a specific job function. The score helps employers and HR professionals in the functions of workforce planning, recruiting, onboarding, training & development, as well as succession planning. The Universal Talent Score sheds light on the capabilities of a potential recruit and to what extent he/she will fit the job. It is also an indicator of how big of an investment must be made in training and developing existing employees. The talent score could also be used to analyze and project performance in light of employee capabilities, strengths, and weaknesses. It may be compared to productivity metrics, efficiency metrics, and training metrics. Furthermore, in the case of downsizings, the UTS may shed light on the competencies and capabilities the organization is letting go of. Of course, it would make more business sense to let go of employees with lower talent scores. Overall, the ultimate objective of the Universal Talent Score is to be used as an indicator of latent employee value at present and for the future.

4. Methods

To obtain the universal talent score result, a respondent has to take the UTS assessment. At present, the tool is web-based, but is currently being developed into a mobile application compatible with both iOS and Android. Overall, the maximum allotted time to complete the assessment is 37.5 minutes. Once all 150 scenarios have been responded to, the aggregate Universal Talent Score is obtained. The minimum score is evidently 0, and the maximum score is 300. Next, the score is then classified by dimension (performance, potential, personality, and qualifications). Moreover, the score of each dimension is then evaluated as *high* or *low*. A high classification is obtained if the result is in the 60% or more of the score range of that dimension, and a low classification is obtained if it is in the lower 40% bracket. Subsequently, a graphical representation of the score is given in the form of a histogram and then, finally, the score results are analyzed.

5. Discussion

Since there are four dimensions in the Universal Talent Score assessment tool, there would be sixteen outcomes of high/low combinations. Each one of these outcomes has been investigated and analyzed as follows.

If the respondent has scored "high" on all four dimensions, then he/she is a STAR Such an employee is a valuable asset to his/her current organization or any future organization he/she may join. Stars are most likely to maintain performance, accomplishments, and behaviors that consistently and considerably surpass the established standards. They are equipped with all the skills and talents that are needed to succeed in today's dynamic education industry. They're a future leader and a role model to many others around them.

If the respondent has scored "high" on performance, potential, and personality, but "low" on qualifications, then he/she is EMERGENT. Such an employee is currently in the process of becoming a prominent teacher. At present, his/her professional qualifications are poor compared to other coworkers in the education industry. As a result, he/she is advised to add value to his/her talent by complementing it with further education, certificates, diplomas, trainings, credentials, and/or experiences. If he/she are successful in adding value to him/herself then he/she is a few steps away from becoming a star!

If the respondent has scored "high" on performance, potential, and qualifications, but "low" on personality, then he/she is a MISMATCH. Although such an employee is currently performing well and he/she has the right professional qualifications, their personality is not quite matched to that of a successful teacher. It is advised that he/she further enhances his/her self-confidence, self-image, and motivation as well as traits such as empathy, multi-cultural awareness, and emotional intelligence. Otherwise, he/she may still pursue a successful career in academia and/or education but not necessarily in teaching. It is advised that such employees make some soul searching to find out their true calling.

If the respondent has scored "high" on performance and potential, but "low" on personality and qualifications, then his/her talent is SPECULATIVE. It is mostly based on conjecture rather than knowledge. He/she is currently a good performer with high potential, but should further develop his/her personality traits so they are more pertinent to today's dynamic and demanding classroom environment. It is also advised that he/she complement that with further enhancing his/her professional qualifications.

If the respondent has scored "high" on performance, personality, and qualifications, but "low" on potential, then his/her talent is STATIC. Such an employee is a high performer with the right personality traits and qualifications for a teacher. He/she feels secure in his/her current position and is happy to remain safe and unthreatened. He/she is not a big fan of change and is satisfied with his/her present situation. Nonetheless, he/she would be considered a core employee in any school or educational institution.

If the respondent has scored "high" on performance and personality, but "low" on potential and qualifications, then his/her talent is RISKY. Although he/she is currently performing well, this employee still lacks the potential to develop into a successful teacher in the long run. He/she may be trying out teaching at present, and it is advised that if they wish to turn it into a lifetime career, they should further develop their professional qualifications and their passion for the vocation.

If the respondent has scored "high" on performance and qualifications, but "low" on potential and personality, then his/her talent is INERT. Such an employee lacks the ability or strength to move forward in spite of his/her current high performance and high professional qualifications. Should he/she wish to further advance in their career as a teacher, it is advised that they work on developing their achievement drive, creativity, willingness to learn as well as passion.

If the respondent has scored "high" on performance, but "low" on the other three dimensions, then he/she is INDUSTRIOUS. Such an employee is diligent and hard-working, and with this attitude he/she will be able to grow. However, as a teacher, hard work is simply not enough. As a result, they are advised to complement that with the right professional qualifications as well as to develop some of their personality traits in order to become a successful and popular teacher.

If the respondent has scored "high" on potential, personality, and qualifications, but "low" on performance, then he/she is an ENIGMA. In spite of their high potential, right personality, and adequate professional qualifications employees who fall within this category are currently underachieving! It is advised that he/she investigates, identifies, and deals with the reason(s) behind his/her underperformance so he/she could become a star.

If the respondent has scored "high" on potential and personality, but "low" on performance and qualifications, then he/she is a ROUGH DIAMOND. The talents of rough diamonds need polishing so they can develop into strengths that help them shine bright in today's challenging education industry. With some coaching, training and career development, they will be able to unleash their hidden potential and awaken their dormant talent to become highly valuable teachers.

If the respondent has scored "high" on potential and qualifications, but "low" on performance and personality, then his/her talent is PROSPECTIVE. He/she has the right professional qualifications as well as high potential to become a successful teacher, but it is advised that they further develop their passion for the profession so that it positively reflects on their current weak performance.

If the respondent has scored "high" on potential, but "low" on the three other dimensions, then he/she is UNMOTIVATED which partially explains his/her current poor performance. At present, employees in this category seem not to have the interest in or the enthusiasm for teaching. Their potential is high but it is advised that they further develop their professional qualifications as well as certain personality traits if they wish to, one day, become a successful teacher.

If the respondent has scored "high" on personality and qualifications, but "low" on performance and potential then his/her talent is LISTLESS. At present, he/she lacks the energy and/or enthusiasm required for good performance. Listless employees have the right personality and professional qualifications for a teacher, but they lack the potential to become successful educators in the long-run.

If the respondent has scored "high" on personality, but "low" on the three other dimensions then he/she is AFFABLE. Such an employee is friendly, good-natured, and easy to talk to, but he/she lacks the potential and professional qualifications to become a successful teacher in the long-run. To capitalize on their personality traits, affable employees may pursue parallel careers such as coaching or training and development.

If the respondent has scored "high" on qualifications, but "low" on the three other dimensions, then he/she is DISPIRITED. Employees who fall within this category are currently disheartened and have lost the enthusiasm and hope of one day becoming a successful teacher. It may be that they specialized in education to later find out that it was not their true calling. It is recommended that such employees put their qualifications to a better use – one that would allow them to perform well and thrive.

Finally, if the respondent has scored "low" on all four dimensions, then he/she is a TALENT RISK. Such employees are most likely to perform below the established standards or in a manner that is inconsistent with organizational missions and goals. They lack many of the skills and talents that are sought by schools today. It is advised that they develop an action plan to improve and develop their talents and qualifications because the latter are the keys to their success.

6. Conclusions

In the near future, human resources departments all around the world are expected to make serious investments in collecting and analyzing data to make people decisions. People analytics, a pioneering strategy that has been evolving over the past few years within the field of talent management, has the potential to considerably change the way HR will function. However, HR organizations and departments still appear to be weak in developing the capabilities to take advantage of the potential of such analytics.

Today, more than ever before, human resources professionals are having access to employee metrics that are allowing them to manage their talent just like they have been managing their other resources all along. Consequently, in the near future, using data to connect seemingly unrelated information will become a new core competency of talent management professionals as they become experts in the close interrelationship of talent and business performance. Talent measurement will help organizations quantify skills gaps, identify plans to shore up skills in areas identified as deficient, and measure progress on learning and development programs designed to increase skills.

The science of hiring is predicated on the use of highly reliable and valid measures of human competencies to make robust predictions about future success. There are numerous options for assessment so the question becomes which assessments to use as part of candidate and employee processes. The suggested Universal Talent Score in this research is a new and simple diagnostic metric that may provide decision makers with significant information about the value and importance of the talent at hand and within reach.

In light of all of the above, organizations across the globe are working very hard to identify, attract, integrate, develop, motivate, and retain top talent. The time has come for higher education institutions to capitalize on this trend as well. The Universal Talent Score discovers great talent and acts as a strong indicator and predictor of the competence and value-creating capacity of an employee – specifically a teacher job function in this article. By no means does The Universal Talent Score capture everything. Nonetheless, it definitely includes the most important ingredients for the recipe of success in the education industry.

References

Abi Abdallah, Reem (2016). Scientific Research Report 4: Updated Methodology for Assessing The Universal Talent Score (UTS): Measure Talent to Manage It! Bucharest, Romania: FAIMA, UPB.
Abi Abdallah, Reem (2017). Scientific Research Report 5: The Universal Talent Score (UTS): Conducting an International Delphi Study to Assess Professors' Talent in Higher Education Institutions. Bucharest, Romania: FAIMA, UPB.
Christie, D. (2005). Learning to grow our own: A study of succession planning at Douglas College (Master's thesis, Royal Roads University). Available from Dissertations & Theses: A&I database. (Publication No. AAT MR05124)
Clunies, J.P. (2007). Benchmarking succession planning and executive development in higher education: Is the academy ready now to employ these corporate paradigms? *Academic Leadership: The Online Journal, 2* (4), Retrieved from https://scholars.fhsu.edu/alj/vol2/iss4/3
Heuer, J. J. (2003). Succession planning for key administrators at Ivy-Plus universities (Doctoral dissertation, University of Pennsylvania). Available from Dissertations & Theses: A&I database. (Publication No. AAT 3084871)
Lynch, D. (2007). *Can Higher Education Manage Talent?* Retrieved January 10, 2018, from http://www.insidehighered.com/views/2007/11/27/lynch#

LIVING IN SPAIN: EXPERIENCES OF IRISH ERASMUS STUDENTS

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Abstract

Living and studying in another country requires students to pursue a process of integration and immersion into a number of areas of life, among them university itself, as well as social and cultural events and day-to-day activities, all of which require relationships to be built. As English has become the *lingua franca* in many countries, supported by widespread use of Internet and social networks, English-speaking students nowadays face greater challenges to using Spanish as a means of communication in order to fully integrate into the host country.

Engberg and Jourian (2015) advocate the idea of intercultural wonderment, which entails students pushing themselves beyond their comfort zone and immersing themselves in the culture of the host country, as contributing to students' development of a global perspective. However, students' varying attitudes during study abroad are key to integration into the different domains in which they live (personal, academic, social/cultural). While research on study abroad is abundant, and students' gains during their study abroad are generally positive, less attention has been paid to how affective factors contribute to Erasmus students' integration into the host country.

This paper aims to identify the strategies adopted by a cohort of students from an Irish university during their year abroad in Spain as a means of explaining their process of integration into the host country. The data used for this study were an integral part of a module completed by the students during their study abroad, where students wrote two reflective assignments in Spanish to analyse their experiences during study abroad. A content analysis approach was adopted, with results showing that students who made efforts to move out of their comfort zone had a positive experience of integration. The experiences of students who did not integrate so successfully are discussed and recommendations that may be relevant for students and institutions in their preparation for study abroad are provided.

Keywords: Study abroad, integration, foreign languages, higher education, reflection.

1. Introduction

The Erasmus programme was established in Europe in 1987 with a view to enable mobility of staff and students across higher education institutions in Europe, and over 3 million students have benefited from the programme by 2013 (European Commission, 2015). Although spending time studying abroad as a means of developing language skills is not a new phenomenon (Mitchell at al. 2015), many university programmes in Europe nowadays include a period of studying and living in another country as an integral part of the course of study. During their time abroad, students go through a process of integration and immersion into different spheres of life, among them university itself, social and cultural events and day-to-day activities, which requires effort on their part, in particular to move out of their comfort zone and be open to new experiences.

The term integration is used in this paper to refer specifically to the building of relationships through educational, social, cultural and day-to-day activities undertaken by students during study abroad. Immersion and integration are used interchangeably in this paper although in Second Language Acquisition the term immersion is generally reserved to formal education delivered through the medium of the L2 (Coleman 1997). Linked to integration is the concept of intercultural adaptation that relates to issues arising as a result of contact with other cultures (Zhou et al. 2008). The integration process generally results in many gains, including linguistic ability, personal development and a lifetime experience that the students will treasure forever. Engberg and Jourian (2015) advocate the idea of intercultural wonderment, which entails students pushing themselves outside their comfort zone and immersing into the culture of the host country, as contributing to students' development of a global perspective. However, embarking on such a journey is not easy despite many students having gone through a period of preparation before travelling to the host country.

2. Literature review

Jackson (2017) states that, prior to departure for the host country, many students are excited about having an opportunity to make friends and experience another way of life. However, Meier and Daniels (2013) report that many students find it difficult to make meaningful contact with locals during their time abroad. Goldoni (2013) adds that for immersion to happen students need to be motivated and willing to invest in developing contacts with L2 speakers and the host community.

When students of languages are faced with using the L2 either in the classroom or in an L2 context, many of them experience foreign language anxiety (FLA). MacIntyre (2007, p. 565) defines FLA as "the worry and usually negative emotional reaction aroused when learning or using an L2". Woodrow (2006) reported that one of the most frequent sources of anxiety occurs when interacting with native speakers, while in classroom situations oral presentations were cited as the greatest stressor. His study concluded that perseverance and the development of language skills were the coping strategies most widely used by the students when addressing FLA. A particular challenge for English speakers during their study abroad is that English is very often the *lingua franca* available to them (Ife 2000; Mitchell et al. 2015) for communicating with their peers as well as with other exchange students whose English skills are often better than those in the L2 and even with the locals who are eager to practise their English with L1 native speakers.

The process by which students integrate into the host country during study abroad is not a smooth one and its pace may differ for each student, as reported by Beaven and Spencer-Oatey (2016). However, all students experience similar challenges during study abroad. This paper examines affective factors contributing or hindering to building relationships during study abroad. The research questions to be considered are:
1. What role does language competence play in the process of integration?
2. In which sphere of life do students experience greater challenges regarding integration?

3. Context

Students of International Business with Spanish at University College Dublin undertake a compulsory academic year in Spain during the third year of their undergraduate studies. During that year, students complete a number of academic modules on Business subjects taught in Spanish. Many students also take language specific courses during their year abroad, including an intensive course prior to the start of the academic year and regular language courses that may continue for a full semester. Furthermore, students from the UCD Business programme are required to complete two 5ECTS year-long modules for their home university. These two modules focus on student reflection and intercultural experiences. Generally, these modules differ from ordinary academic modules in that they focus not on content but on a number of tasks that students complete in order to use and develop their language skills, as well as to reflect on their experience abroad. All the tasks for the second of those modules, namely *SLL30070 Language Experience Abroad*, are completed using the target language. Students are required to submit a total of four assignments for the module, two of which are group tasks (an oral presentation and a blog). The other two are individual written assignments submitted online via the university VLE. The first reflection is submitted after 6-7 weeks of their stay in Spain and the second reflection is submitted at the end of the academic year. In the first assignment, students are asked to reflect about their experience abroad to date. More specifically, they are asked to examine how their language competence has changed since their arrival in the host country. The second reflection asks students to capture key moments throughout the year that have had a special meaning because they represented a significant development, or because they were challenges that they had to face, and what they have learnt in relation to themselves as learners of a language while immersing in the culture where that language is spoken. Each assignment is about 900 words long and is written in Spanish.

4. Research methodology

4.1. Participants

During 2016-17, a total of 20 students from the Business with Spanish programme spent their academic year at a host university in Spain. Nineteen out of the 20 students returned to UCD in 2017-18 and registered for the final year of the programme while one student took a leave of absence. The researcher contacted the 19 students in September of 2017 via email. They were provided with an information sheet about the research project and a consent form. If they agreed to participate, they were asked to sign and return the consent form to the researcher, allowing her the use of the two reflection assignments from *SLL30070* for the research project. When completing the assignments, students were

not aware of the research project and the grade approval process had been completed by the time they were contacted. Twelve of the 19 students agreed for their assignments to be used for this research project. The host universities where the participants spent the year abroad are set out in Table 1.

Table 1. Host Universities.

University	Number of students (n=12)
Carlos III, Madrid	1
Comillas, ICADE, Madrid	3
Deusto, Bilbao	2
Deusto, San Sebastian	2
Navarra	2
Salamanca	1
Valencia	1

4.2. Procedure

Two written assignments, submitted by the students as part of the module *SLL30070 Language Experience Abroad* during their year abroad 2016-17, were used to provide data for this study. The data of interest from the assignments relates to the strategies adopted by the students during their integration into the host country and the feelings that surfaced as a result in their first reflection (after 6-7 weeks abroad), and at the end of the academic year in the second reflection. This research had received approval from the University Ethics Committee and students were assured that participation in this study had no effect on their grades. The written texts were subjected to a content analysis that was carried out in Spanish. Relevant extracts used for this paper were translated into English after analysis.

5. Results

All the participants except one describe in their first assignment their lack of confidence in using the L2 when they arrived in Spain. Their anxiety was significant in all spheres. For example, they mention the difficulty in understanding university lecturers and a fear of being asked questions in class (academic sphere); they also describe their anxiety in situations such as dealing with landlords (day-to-day). One of the participants expresses his anxiety in the following excerpt:

I was afraid during the first weeks in CITY. Being totally submerged and surrounded by a new culture and a language, I did not have much confidence using Spanish. (A1_N02) [My own translation]

A number of participants recognise that their anxiety about using the L2 was due to their fear of making grammatical mistakes. One of the participants explains in the following excerpt such fear in relation to his housemate:

At first, I was afraid talking to him because I did not want to be wrong, but he does not care so I can talk without anxiety now. (A1_N03) [My own translation]

For a significant number of participants, the anxiety and fear about using Spanish during the first weeks in Spain led to them not moving out of their comfort zone. As a result, they spent a lot of time with English speakers, and were reluctant to participate in social or cultural activities where native speakers were involved. However, after 7 weeks in Spain most of them realised that their anxiety and lack of confidence in using Spanish was decreasing and they were beginning to reflect on the strategies they needed to develop in order to feel more confident about using the language. Some participants recognised that having a Tandem exchange with a native speaker gave them the confidence to speak Spanish. Other participants identified the intensive language course they completed at the start of the academic year as a major factor in reducing their anxiety. After two months in Spain, they were ready to take a more proactive role in integrating into the host country. Reflecting on their language competence allowed them to recognise the strategies they needed to adopt in order to improve their language. Most of the participants explicitly mention their intention to spend more time watching TV in order to develop listening skills as well as making a bigger effort to speak Spanish daily.

By the end of the academic year, the students were able to give expression to their process of integration into the host country by reflecting on challenges, key moments and achievements during the year. Many of the challenges described by the students are language related. The lack of language competence (perceived or real) was the main challenge for them, both in understanding others and in oral expression itself. All students except one described key moments in the integration process. Those moments relate to their integration into the different spheres of life. Students describe many such moments in relation to achievements, including their linguistic improvement, academic successes and feeling comfortable in social, cultural and sporting events with native speakers. Samples of key challenges, key moments and achievements are set out in Table 2 below.

Table 2. Integration process.

Challenges	Key moments	Achievements
* Making friends at university (studies/social) * Development of listening skills (studies/day-to-day/social) * Oral presentations (studies) * Participation in class (studies) * Understanding lecturers (studies) * Group work with native speakers (studies)	* Visit to chemist (day-to-day) * Dinner with native family (social) * Team leader of group project (studies) * Feeling comfortable with native housemates (day-to-day) * Feeling prepared to deliver a group presentation (studies)	* Integrating in the rugby team (social) * Good grades in a written assignment (studies) * Increased listening comprehension and vocabulary (studies/social/day-to-day) * Confidence speaking Spanish (studies/social/day-to-day)

An example about how students felt more integrated into the host country as time went on is described in the following excerpt:

*Another very important moment in which I realized that I had improved my Spanish a lot was during Holy Week. I went to Marbella with my friend X. Before going, we booked a moped for the week. The man in the store did not speak a word in English. ...When we got to the store, there was a problem with the moped. The lights did not work, and the man did not want to change them because it cost money. We argued, and I decided to write down in Spanish what we needed. The lights were finally changed. **I felt great after this event because I had just had an argument in Spanish with a local and I won it.** And also, I had used my oral and written Spanish.* A2_N14 [My own translation and highlight]

All students expressed some regrets at the end of the academic year and they pointed out things they would do differently if they had a chance to go back in time. All spheres of life are mentioned; however, missed opportunities mainly relate to participation in social activities with native speakers and to living with English speakers. Table 3 presents some examples as described by the students:

Table 3. Regrets.

Sphere of life	Example from students' responses
Social	Join sports club earlier in the year. Join more sports clubs. Be more proactive in joining social activities. Get out of my comfort zone early in the year as it was difficult to join clubs late in the academic year.
Personal/Day-to-day	Live with native speakers. Live with Spanish or non-English speakers. Live with native speakers from the start of the academic year.
Day-to-day/Social/Studies	Greater participation in activities (day-to-day and university events) that would contribute to the use of Spanish. Spend more time using Spanish in authentic situations. Make more efforts to meet native speakers.

6. Discussion and conclusions

The findings of this study indicate that the L2 plays a significant role in students' integration into the host country. Fear of communicating in Spanish at the start of their time in Spain resulted in some students relying too much on English. The anxiety expressed by most of the students regarding understanding and using Spanish may be due to the normal process of adjustment, as for many of them it was the first time they had lived in Spain, surrounded by the Spanish language. It may be that students need reassurance about their language competence in order to move out of their comfort zone in the knowledge that although they will initially experience frustration and encounter problems understanding and speaking the L2, they will soon realise that the linguistic difficulties are temporary. Rather than relying on using English as the easy way out, their acceptance of the situation, and their attitude and perseverance will be significant, as argued by Woodrow (2006). Part of the pre-departure preparation may need to place greater focus on addressing student confidence and other affective factors.

In the earlier part of their stay, the strategies used by students to integrate in Spain varied significantly; some students opted for stepping out of their comfort zone and made efforts to integrate into the host country while others decided to wait until they felt more confident and ready to use the L2. However, it is important to note that those who opted to remain safe by living with English speakers, tended to socialise too with English speakers and this resulted in them missing opportunities to live with native speakers, or to join social and sports activities where more native speakers take part. As time went on, it became more difficult to break into the circle of native speakers.

Despite the many challenges faced by students during study abroad, their attitude, interest in the host culture and openness to integration are key to their success. This study revealed that participation in social and cultural events, mainly team activities such as sports, was a fantastic way break into the circle of Spanish speakers. A common interest made it easier to participate in those events. Students who did not seek involvement in social activities attributed this to a lack of confidence in their language skills. Interestingly, many of these students regretted this as they recognised that, even if involvement in socio-cultural activities required a large initial effort, it would have enabled them to integrate better with native speakers, to speak more Spanish and to develop better knowledge of day-to-day life and traditions.

Integration into the host country, as revealed in this study, does not happen easily and requires effort. However, overcoming the initial language barriers seems to be the key to a better integration. The main factors contributing to fuller integration arising from this study were living with native speakers of Spanish and participating in social activities and sports. Respondents found it easier to communicate in Spanish when they took part in social activities, sports or when living with Spanish speakers.

References

Beaven, A., & Spencer-Oatey, H., (2016). Cultural adaptation in different facets of life and the impact of language: a case study of personal adjustment patterns during study abroad. *Language and Intercultural Communication, 16* (3), 349-367, doi: 10.1080/14708477.2016.1168048

Coleman, J. A. (1997). Residence abroad within language study. *Language Teaching, 30*, 1-20.

Engberg, M. E., & Jourian, T. J. (2015). Intercultural Wonderment and Study Abroad. *Frontiers: The Interdisciplinary Journal of Study Abroad*, *25*, 1-19.

European Commission (2015). Erasmus – Facts, Figures & Trends. The European Union support for student and staff exchanges and university cooperation in 2013-2014. Retrieved January 9, 2018, from http://ec.europa.eu/dgs/education_culture/repository/education/library/statistics/erasmus-plus-facts-figures_en.pdf.

Ife, A. (2000). Language learning and residence abroad: how self-directed are students? *The Language Learning Journal,* doi: 10.1080/09571730085200221

Goldoni, F. (2013). Students' immersion experiences in study abroad. *Foreign Language Annals,* doi: 10.1111/flan.12047

Jackson, J. (2017). Intervening in the intercultural learning of L2 study abroad students: From research to practice*, Language Teaching,* doi: 10.1017/S0261444816000392

MacIntyre, P. D. (2007). Willingness to communicate in the second language: Understanding the decision to speak as a volitional process. *The Modern Language Journal*, *91,* 564-576.

Meier, G., & Daniels, H. (2013). 'Just not being able to make friends': social interaction during the year abroad in modern foreign language degrees. *Research Papers in Education,* doi: 10.1080/02671522.2011.629734

Mitchell, R., Tracy-Ventura, N., & McManus, K. (2015). Introduction. In R. Mitchell, N. Tracy-Ventura, & K. McManus (Eds.), *Social interaction, identity and language learning during residence abroad* (pp. 7-13). Amsterdam: Eurosla monographs series 4.

Woodrow, L. (2006). Anxiety and speaking English as a second language. *Regional Language Centre Journal, 37* (3), 308-328, doi: 10.1177/0033688206071315

Zhou, Y., Jindal-Snape, D., Topping, K., & Todman, J. (2008). Theoretical models of culture shock and adaptation in international students in higher education. *Studies in Higher Education,* doi: 10.1080/03075070701794833

INTERCULTURAL AMBASSADORS AT SCHOOLS AND IN TEACHER EDUCATION

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Abstract

Dealing with cultural heterogeneity has become one of the most crucial challenges for teachers making it necessary to linguistically and culturally diversify teacher education.[1] The project "Intercultural Ambassadors at Schools and in Teacher Education", which is part of the project KALEI within the framework of the nationally funded programme "Qualitätsoffensive Lehrerbildung", aims precisely at this kind of diversification:

Initiated at the Centre for Teacher Education of the University of Halle as a measure of professionalisation, it has the intention to raise prospective teachers' awareness of different beliefs and values in culturally heterogeneous teaching/learning environments. In so doing, it defines the dimension of plurilingualism as a vital component of cultural diversity, which is inseparably linked to culturally heterogeneous interpretive schemes.

Accordingly, the immediate experience of cultural as well as linguistic differences is at the centre of the project. Teacher trainees are put into a teaching/learning situation where they first experience and later reflect on the cultural dimension of their individual idea of school and teaching. This very setting is created by bringing together foreign students, prospective students from the "Preparatory German Courses for Refugees" and teacher trainees in the stage of teaching practice placements.

The project participants start with the course "Cross-cultural Mediation and Linguistic Awareness", where they set up culturally mixed Co-Teaching-Teams.

During the teaching practice placements, teachers from participating schools as well as cooperating teaching methodologists of the various subject matters of University of Halle accompany and support the culturally mixed teams in different stages of preparation, realisation and reflection of the Co-Teaching-Lessons.

The project is recorded (audio and video) and scientifically evaluated. Interaction patterns of the different teams are contrasted employing the Documentary Method,[2] additionally a case comparison with regard to different school forms is implemented. Further research questions focus on implicit and explicit value systems:

− How do teacher trainees deal with plurilingualism and culturally shaped ideas of school and teaching within the intercultural cooperation situation (Co-Teaching)?

− Does the experience of the intercultural cooperation situation have an influence on the attitudes of teacher trainees, foreign project participants and/or pupils towards linguistic and cultural heterogeneity?

− Does the cooperation affect the teacher trainees' expectation of self-efficacy relating to teaching situations in culturally heterogeneous groups?

It is planned to continue the project and broaden its research focus to include participating teachers and teaching methodologists. All collected data are processed for the digital case archive developed by KALEI.

Keywords: Teacher education for diversity, cultural heterogeneity, plurilingualism, co-teaching.

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[1] Cf. HRK German Rectors' Conference. (2015). Empfehlung der 14. Mitgliederversammlung der HRK am 14. Mai 2013 in Nürnberg. *Empfehlungen zur Lehrerbildung. Beiträge zur Hochschulpolitik 1/2015*, 19-29. Retrieved from https://www.hrk.de/uploads/media/2015-01_Lehrerbildung_01.pdf

[2] Cf. Bohnsack, R. (2011). *Qualitative Bild- und Videointerpretation. Die dokumentarische Methode*. Stuttgart: UTB.

1. Introduction

Current social challenges such as cultural heterogeneity, social inequality and technological change have an impact on the teaching profession and are transforming and diversifying the demands placed on prospective teachers. In order to react to this kind of transformation, the German Federal Ministry of Education and Research (BMBF) has designated up to 500 million euros in two funding phases (2014-2019 / 2019-2024) for the "Qualitätsoffensive Lehrerbildung", an initiative which supports new approaches and projects in the realm of teacher training. During the first phase, 49 projects at 59 German universities of teacher training receive funding. Selection criteria have been, among others, the lasting impact of the projects on the improvement of teacher training and the harmonisation of the three training elements of the teacher degree. The KALEI project ("Kasuistische Lehrer*innenbildung für den inklusiven Unterricht" / "Casuistic Teacher Training for Inclusive Education") at the Centre for Teacher Education of the Martin Luther University Halle-Wittenberg has been selected for funding. It is focusing on the development of a teacher training which raises prospective teachers' awareness of heterogeneity, enables them to value diversity and to reflect teaching/learning situations in heterogeneous groups.

Although the definition of "inclusion" as a "pedagogy of diversity" ("Pädagogik der Vielfalt"),[3] which comprises different dimensions of heterogeneity, has been fixated as an international standard by the UNESCO a decade ago,[4] in German academic as well as everyday language a narrowing definition is surprisingly prevailing. "Inclusion" is thus too often related exclusively to the dimension of ability-disability, and if ever a culturally broader concept is applied, it tends to reduce the dimension of "cultural heterogeneity" to its mere linguistic scope, focusing on the inclusion of pupils as non-native speakers. This kind of reductive view can even be detected in large-scaled international conferences, which are addressing current developments in teacher training and are nevertheless neglecting the fact that linguistic diversity is not more (and, of course, not less) than a part of cultural heterogeneity.[5]

A closer look at the multiple dimensions of heterogeneity defined by the UNESCO in 2008 ("race, social class, ethnicity, religion, gender and ability") reveals that actually every dimension is permeated with culturally influenced patterns. Consequently, these patterns play a crucial role in processes of in- and exclusion and are thus highly relevant for educational disadvantage. In this perspective, it becomes clear that the question of how to deal professionally with diverse, culturally shaped values and beliefs within culturally heterogeneous teaching/learning environments is at the core of teacher training – and clearly goes beyond language sensitive approaches.

The project "Intercultural Ambassadors at Schools and in Teacher Education", as part of the KALEI project's section "Internationalisation of Teacher Education", tackles precisely this question: it prepares prospective teachers not only for an effective handling of plurilingualism, but also raises their awareness of culturally heterogeneous values and beliefs.

2. Objectives and Design

For the purpose of an "internationalisation at home", the project brings together as cooperating partners teaching methodologists of the various subjects matters offered by the University of Halle, educational scientists, teacher trainees during their teaching placement at school, foreign students, refugee students, and, of course, teachers and pupils in different schools of the region of Saxony-Anhalt (where Halle is located).

The initiative aims at the permanent implementation of intercultural awareness-raising into the two periods of curricular practical placement (Schulpraktika I und II), which present an integrative part of the teacher degree at the Martin Luther University Halle-Wittenberg.

In a first step, foreign Master and PhD students and prospective students from the University's "Preparatory German Courses for Refugees" are brought together with teacher trainees as Co-Teaching-Partners. The culturally mixed teams of two are then trained as Intercultural Ambassadors

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[3]Cf. Prengel, A. (2006). *Pädagogik der Vielfalt. Verschiedenheit und Gleichberechtigung in interkultureller, feministischer und integrativer Pädagogik*. Wiesbaden: VS Verlag für Sozialwissenschaften.
[4]"Internationally, however, [inclusion] is increasingly seen more broadly as a reform that supports and welcomes diversity amongst all learners. It presumes that the aim of inclusive education is to eliminate social exclusion resulting from attitudes and responses to diversity in race, social class, ethnicity, religion, gender and ability". Cf. United Nations Educational, Scientific and Cultural Organization.(2008). *Inclusive Education. The Way of the Future. Reference Document of the International Conference of Education. 48th session, Geneva 25-28 November 2008*, 5. Retrieved from http://www.ibe.unesco.org/fileadmin/user_upload/Policy_Dialogue/48th_ICE/CONFINTED_48-3_English.pdf
[5]Accordingly, the congress *New International Perspectives on Future Teachers' Professional Competencies* (2017, September, G. Kaiser (Chair)) contains a section entitled *Linguistic and Cultural Heterogeneity* in which de facto not a single talk addresses non-linguistic aspects. Cf. the programme retrieved from https://www.qualitaetsoffensive-lehrerbildung.de/intern/upload/events/01JA1511_Profale_Congress_Programmbroschuere_Stand_28.06.2017.pdf

of culturally open schools in order to be placed in partner schools of different school forms during the period of practical placement. The training starts with a three day full-time seminar "Cross-cultural Mediation and Linguistic Awareness" which prepares students and partners for their commitment through the reflexion of individual aims as well as through case work and role play. Communication and presentation techniques are imparted, furthermore within the seminar section "Intercultural Understanding – Intercultural Values" participants acquire basic theoretical knowledge of World Ethics, Human Rights Education and Intercultural Competence.

During the following stages of preparation, realisation and reflection of Co-Teaching-Lessons, all teams are continuously accompanied and supported by the cooperating teaching methodologists as well as by the cooperating teachers in partner schools. All Co-Teaching-Teams have space for discussion and are encouraged to reflect cultural dimensions of school, differences in self-conception and teacher habitus and not least differing value orientations.

At the same time, the Co-Teaching-Lessons are conceived to give pupils of all participating schools an insight into cultural, linguistic, religious and social diversity.

The project is recorded (audio and video) and scientifically evaluated. Beyond that, all collected data are didactically worked up, anonymized and fed into an Open Access Portal for further free investigation as well as for didactic application within intercultural formats in school and teacher training.

3. Methods

Due to the innovation of the format and the multitude of intercultural team-constellations it implicates, the collected data (audio and video) appear particularly insightful: the research design goes beyond previous studies on Co-Teaching, by transferring it into the area of cross-cultural educational research. Interaction patterns of the different Co-Teaching-Teams are contrasted employing the Documentary Method,[6] which is particularly suited for the study and confrontation of social practices as well as for the exploration of implicit knowledge within comparative research designs.

A case comparison with regard to different school forms is implemented. In winter term 2017/2018 the actual co-teaching stage was started with a focus on two school subjects, English and Geography, and the teaching methodologists from those two subject matters. Participating foreign students came from Japan and Syria. Summer term 2018 will include at least three more subjects (presumably Art Education, Biology and Social Studies). Research questions focus particularly on implicit and explicit value systems:

− How do teacher trainees deal with plurilingualism and culturally shaped ideas of school and teaching within the intercultural cooperation situation (Co-Teaching)?

− Does the experience of the intercultural cooperation situation have an influence on the attitudes of teacher trainees, foreign project participants and/or pupils towards cultural and linguistic heterogeneity?

− Does the cooperation affect the teacher trainees' expectation of self-efficacy relating to teaching situations in culturally heterogeneous groups?

4. Discussion and conclusions

The first project cycle has shown that not only German teacher trainees, but also participating students from abroad benefit greatly from the project, by getting directly in contact with German school life, its predominating pedagogical practices and institutional arrangements. Considering that currently in Saxony-Anhalt a lot of teachers from abroad are in the process of recognition of their degree, which is often a lengthy procedure (depending on the estimated equivalence and thus validation of the foreign teacher degree), the project's second cycle will further be opened for foreign teachers in the process of degree validation in order to offer them the opportunity of a first contact and working experience within the German school system. Several teachers from Syria have applied for the second and third cycle. Their participation offers not least an additional research perspective and subsequent research questions: differing teacher habitus can be contrasted and their cultural dimensions are to be carved out and confronted by means of sequence-analytical habitus reconstruction ("Sequenzanalytische Habitusrekonstruktion").7

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[6]Cf. Bohnsack, R. (2011). *Qualitative Bild- und Videointerpretation: Die dokumentarische Methode*. Stuttgart: UTB.
[7]Cf. Kramer, R.-T. (2017). Sequenzanalytische Habitusrekonstruktion. Methodologische Überlegungen zu einer neuen Methode der Habitushermeneutik. In M. Heinrich & A. Wernet (Eds.), *Rekonstruktive Bildungsforschung. Zugänge und Methoden* (pp. 243-267). Wiesbaden: Springer VS.

In the course of three years the project will be permanently implemented within the curricular structure of practical placements for teacher trainees of all subject matters at the University of Halle. In doing so, the issue of raising intercultural awareness becomes a vital part of the practical phases and thus of teacher professionalisation.

Recent studies have shown a significant lack of international exchange (e.g. in the form of academic and practical student experiences abroad) and more generally a lack of intercultural education in teacher training.8 The project "Intercultural Ambassadors at Schools and in Teacher Education" offers a straightforward and effective means to enhance intercultural awareness in teacher education and to prepare teacher trainees for effective pedagogical action in the intercultural classroom. By addressing cultural heterogeneity and especially culturally shaped beliefs and value orientations, it works against a narrow definition of "inclusion" and counters the reduction of "intercultural awareness" to a mere linguistic sensitivity.

References

Bohnsack, R. (2011). *Qualitative Bild- und Videointerpretation. Die dokumentarische Methode*. Stuttgart: UTB.

HRK German Rectors' Conference. (2015). Empfehlung der 14. Mitgliederversammlung der HRK am 14. Mai 2013 in Nürnberg. *Empfehlungen zur Lehrerbildung. Beiträge zur Hochschulpolitik 1/2015*, 19-29. Retrieved February 2, 2018, from https://www.hrk.de/uploads/media/2015-01_Lehrerbildung_01.pdf

Kaiser, G. (Chair, 2017, September). Programmbroschüre Profale Congress Universität Hamburg. *New International Perspectives on Future Teachers' Professional Competencies.* Retrieved February 2, 2018, from https://www.qualitaetsoffensive-lehrerbildung.de/intern/upload/events/01JA1511_ Profale_Congress_Programmbroschuere_Stand_28.06.2017.pdf

Kramer, R.-T. (2017). Sequenzanalytische Habitusrekonstruktion. Methodologische Überlegungen zu einer neuen Methode der Habitushermeneutik. In M. Heinrich & A. Wernet (Eds.), *Rekonstruktive Bildungsforschung. Zugänge und Methoden* (pp. 243-267). Wiesbaden: Springer VS.

Prengel, A. (2006). *Pädagogik der Vielfalt. Verschiedenheit und Gleichberechtigung in interkultureller, feministischer und integrativer Pädagogik*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Stifterverband für die Deutsche Wissenschaft, in Kooperation mit McKinsey&Company. (2015). *Hochschul-Bildungs-Report 2020. Jahresbericht 2015. Schwerpunkt: Internationale Bildung*, 55. Retrieved February 2, 2018, from http://www.hochschulbildungsreport2020.de/download/file/fid/40

United Nations Educational, Scientific and Cultural Organization. (2008). *Inclusive Education. The Way of the Future. Reference Document of the International Conference of Education. 48th session, Geneva 25-28 November 2008*, 5. Retrieved February 2, 2018, from http://www.ibe.unesco.org/fileadmin/user_upload/Policy_Dialogue/48th_ICE/CONFINTED_48-3_English.pdf

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8Cf. Stifterverband für die Deutsche Wissenschaft, in Kooperation mit McKinsey&Company. (2015). *Hochschul-Bildungs-Report 2020. Jahresbericht 2015. Schwerpunkt: Internationale Bildung*, 55. Retrieved from http://www.hochschulbildungsreport2020.de/download/file/fid/40

TO USE OR NOT TO USE?
QUESTIONING WHILE CONDUCTING A DELPHI-TYPE EXERCISE
IN HIGHER EDUCATION

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Abstract

This paper presents the outcomes of a segment of the research work completed in the framework of a more comprehensive doctoral study aiming at developing a "universal talent score" – for better talent management. It explores the possibility to combine the advantages of Delphi technique and group decision theory – developing a computer-aided instrument designed to measure the talent by providing a talent score. This instrument was tested in the higher education environment. Based on literature survey, a consistent set of talent measurement criteria was constructed. Consequently, *the focus of this paper* is on estimation of the weights of the criteria used. In order to estimate the respective weights in case of university professors, a Delphi-type exercise was conducted among respected academics across the world. Sound results were obtained just after the first round of queries. However, while conducting the exercise, some issues were identified or signalled by participants – that have fed the *Hamletian* question about Delphi: *To be* or *not to be* [recommended to be used]?
The authors prefer – instead of giving a definitive verdict – to offer a list of advantages versus disadvantages – turned into recommendations. In addition, the lessons learnt during this Delphi-type exercise might be valuable for both theorists and hands-on researchers on higher education issues.

Keywords: Delphi-type exercise, higher education, university professors, universal talent score (UTS).

1. Introduction

This paper presents the outcomes of a segment of the research work completed in the framework of a more comprehensive doctoral study aiming at developing a "universal talent score" – for better (more accurate and finer) talent management (Abi Abdallah, 2018). During the spring of 2017, a computer-aided instrument designed to measure the talent by providing a talent score. The talent score is meant to be general and universal (Abi Abdallah, 2016) – in that sense of applicability in any area of human activity. One pilot was conducted to test the talent measurement instrument in the higher education environment, in case of university professors.

The *focus of this paper is on the procedure used to estimate the weights of the criteria* used to measure the talent [of university professors], and not on the methodology and process of criteria selection, neither on the methodology, algorithm, and computer-aided process of assessing the talent score, in its entirety. As the authors decided to use a Delphi-type method for assessing the weights of the criteria used by algorithm that calculates the universal talent score (UTS), the remaining of this paper is organized as follows; circumstances of the proposed Delphi-type exercise and sources of data; results of the exercise; lessons learnt and recommendations; conclusions, limitations and further research avenues.

2. Brief survey of the Delphi literature

The philosophy of the so-called DELPHI method is described as "an experiment ..., which was devised in order to obtain the most reliable opinion consensus of a group of experts by subjecting them to a series of questionnaires in depth interspersed with controlled opinion feedback" (Dalkey and Helmer, 1963, p.458).

Over the few years that followed, several synthetic definitions were devised as the Delphi method generated interest among experts: "analysis of the future" (Helmer-Hirschberg, 1967); "a methodology used for the elicitation of opinions of experts" (Brown, 1968); "an experimental study of group opinion" (Dalkey, 1969); "an experiment in probabilistic forecasting" (Brown, 1973); an "assessment [based on] expert opinion, forecasting and group process" (Sackman, 1974).

It took about a decade for DELPHI to emerge from secrecy to public, and, subsequently, about same period of time for Delphi method to become public knowledge (Turoff and Linstone, 1975).

Delphi started as a forecasting method and its potential were captured as early as a half-century ago (Turoff, 1970). Rowe and Wright (1999; 2001) reckoned Delphi method as a forecasting tool and underlined the role Delphi techniques play in forecasting echoing expert opinions. Delphi's popularity and expansion was, in general, based on positive outcomes. Rescher (1998), exploring predictive situations, considered "their broader implications in science, in philosophy, and in the management of our daily affairs". Thus, the method disseminated in various areas of human activity: economy (Green, Armstrong and Graefe, 2007); policies for social changes (Turoff, 1970; Tapio, 2002); emergency situations (Passig, 1997); social policy and public health (Adler and Ziglio, 1996). Hilbert, Miles and Othmer (2009) used Delphi as a foresight tool for participative policy-making in inter-governmental processes in developing countries, and Bolognini (2001) provided an example of "electronic democracy".

Yet McLaughlin (1990) detected education as an area of interest for Delphi studies. From the standpoint of our study, it is important to notice the intertwined influence of the Delphi method in *the educational area*: "The Rand Change Agent study, undertaken from 1973–1978, indicated *a significant shift in the ways people thought about affecting planned change in education* … also underscores the *essential contribution of teachers' perspectives as informant* and as a guide to policy and suggests that the challenge lies in understanding how policy can enable and facilitate effective practice".

Delphi method enjoyed popularity but also some degree of criticism. Relative to the effectiveness of the Delphi technique, Rowe and Wright (1999) agree that findings indicate that Delphi groups outperform statistical groups and standard interacting groups, "although there is no consistent evidence that the technique outperforms other structured group procedures", which make generalizations problematical.

The vast use of Delphi techniques for forecasting should not make other application area look unimportant. When decision making processes require large scale consultation, *Delphi method can contribute to the decision making* (Ziglio, 1996).

3. Towards a Delphi-type exercise in higher education environment

The success of Delphi techniques – as interactive communication manner, structured and systematic – is grounded on solid principles and their subsequent advantage (participants' opinions anonymity) when consultation of large groups or panels of experts is necessary to have access to estimations; it is actually 'elicitation of opinions of experts' as Brown (1968) formulated.

Originally, Delphi was designed as a tool to scrutinize the future, based on the above opinions. Essentially, it was about collecting the-best-quality-possible information in order to make a crucial decision in a given area of interest. Delphi was born when such crucial decision had to be made (as a rule, these decision types are longer term, huge impact). This explains why Delphi has been built as a forecasting method towards longer and longer terms, and eventually merged with that new area of interest called *Foresight* or '*Futures studies*' in management (Schwarz, 2008), corporations (Rohrbeck, 2010) or society as a whole. In higher education, there are notable *Foresight* studies (Slaughter, 1992; Dator, 2002; Peters, 2003; Peters and Freeman-Moir, 2006). *Group decision* is another area of study where Delphi method has found applicability (Arrow, 1950; 1951; Moscovici and Zavalloni, 1969; Forsyth, 2006).

In this landscape of Delphi applications: *What about important decisions with long-term horizons* (in that respect of impact) but with *short-run decision objective*?
This is exactly the case proposed by this paper:
A group decision process with long-run impact (long time horizon) as higher education decisions typically are; but the objective of the decision making process is other than forecasting – the problem of estimating the weights of the criteria used to calculate the talent score – according to the methodology described in details by Abi Abdallah (2017, 2018).

4. A Delphi-type exercise. Circumstances and sources of data

The reasons behind (picking the Delphi method for this case) is the Delphi's full set of advantages (systematic consultation of the panel of experts in higher education, structured information flow, experts' opinions anonymity / confidentiality, feedback, credible convergence of expert's opinions), at the same time avoiding the main risk factor – related to forecast applications of Delphi techniques: unconditional reliance on historical data (Basu and Schroeder, 1977). The Delphi exercise proposed by authors also conserves all general advantages of Delphi consultation method: avoiding usual traps and error sources (denying responsibility, procrastination, trivialization of the subject in discussion). Because of the particular character of this Delphi application, the authors agree to call it "Delphi-type" exercise.

As result of systematic review of literature on knowledge and talent management (Abi Abdallah, 2016), a consistent set of 75 talent measurement criteria was constructed. The criteria are grouped by four dimensions: performance, potential, personality, and qualifications.

The criteria are general and universally applicable to any area of human activity; hence the attribute 'universal' to the talent score: Universal Talent Score (UTS). The criteria should be weighted, and the weights vary, depending on each area of activity. In order to estimate the weights of the respective criteria, for the reasons exposed above, the authors decided to use a Delphi-type exercise for assessing the weights of the criteria used by the algorithm that calculates the UTS.

The *focus of this paper is on the procedure used to estimate the weights of the criteria* used to measure the talent, and not on the methodology and process of criteria selection, neither on the methodology, algorithm, and computer-aided process of assessing the talent score, in its entirety (methodology is detailed in: Abi Abdallah, 2018).

The Delphi-type exercise was conducted as a pilot during the spring 2017 (March-April) – to test the talent measurement instrument (UTS) in the higher education environment, in case of university professors. *The goal was to collect weight estimations from an expert panel* of respected university professors across the world. The expert panel list counted fifty names, from thirty countries, covering all continents. The list of experts was developed considering the professors' seniority, international visibility, experienced in higher education and international projects as well as in educational policy development. In order to increase the chances to get answers, the original listing considered acquaintances from previous joint international activities. As originally the intention was to use the data for (intercultural) comparative studies, the number of authors' co-nationals was higher (ten Romanians). The data collected were then introduced in a computer database, to be processed using a software tool specially developed for the purpose of calculating the UTS for each prospect talent, in real-time, online.

5. Results

As communication relied on e-mails, an invitation letter was sent to all fifty professors from the expert panel list; the answers arrived in two waves (the second one coming after reminding messages) – as depicted in *Table 1*.

Table 1. The structure of the higher education expert panel.

No.crt.	Country	Number of responding professors		
		Wave 1	Wave 2	Total
1	Belgium	-	1	1
2	Germany	-	1	1
3	Greece	-	1	1
4	Italy	1	-	1
5	New Zealand	1	-	1
6	Philippines	1	-	1
7	Poland	-	1	1
8	Portugal	1	1	2
9	Romania	2	8	10
10	United Arab Emirates	1	-	1
11	USA	-	1	1
Total	*11 countries*	*7*	*14*	*21*

During the first wave, just seven professors from six countries did answer to the invitation letter and have completed their submissions. Five experts denied for different reasons.

An e-mail message was sent to participants (March 14, 2017) synthesizing the opinions and average results, looking for consensus. All seven participating professors have unanimously agreed that the average scores of their individual weights are reasonable and adequate for the assessment of the talent required by a university professor to succeed in today's dynamic academic environment. As such, the *international Delphi exercise came to an end with just one round*.

While receiving answers from wave 1, a reminding e-mail message was send to the rest of the panel members. As result, fourteen new answers from five new countries arrived as wave 2 (*Table 1*).

The consolidated average score (wave 1 plus wave 2) did change the average scores by dimensions, but standard deviations were in general less significant than in the first round.

The exercise closed by the end of April (for procrastination or no response at all).

Concluding, it was a positive exercise, which proved that *Delphi is a workable approach that could be applied in case of weight estimation problems.*

It served its purpose and enriched the research with trusted and valuable input from renowned professors and professionals around the world as sound results were obtained just after the first round of queries. However, while conducting the exercise, some issues were identified or signalled by participants serving as lessons to learn or sources for recommendations.

6. Lessons learnt and recommendations

The results are in line with previous studies that show – in case of multi-criterial decisions and relatively high number of criteria – differences in results (ranking of options) are less significant as the criteria weights change. In other words, trying to distribute weights along a too large number of criteria is almost like considering criteria of equal importance. Therefore, when the case (as present situation), the weights should be allocated to a smaller number of criteria (the rest being considered as unimportant).

The selection of the panel members considering also the previous professional relationships (hoping that it will induce a higher rate of response) was a false assumption.

When the data collected are processed, statistics principles apply (for example, when calculating average scores, the extreme figures should be disregarded); unless special explanations are advanced by responding experts.

Several experts made a valuable comment: weights may vary not only from one type of job to another, but also within the same (in case of university professors, the criteria weights may change along the range of subjects taught). In addition, professors from different cultures and education structures may have different opinions on criteria weights. Nevertheless, the cultural differences are less and less important as the university rank is higher. Anyhow, the cultural print should be considered.

After the Delphi exercise was completed, authors realized that, in spite of their profound expertise, professors might be subjective in their evaluations. Hence, a more complete view on 'university professor position' should be realized by studying the students' opinions as well (done at a later stage).

7. Conclusions, limitations, and further research avenues

Considering that this Delphi-type exercise was a rather new, risky experiment, the overall result is positive and encouraging. Besides the practical advantages of the software-based instrument for assessing the talent score, this paper explores the possibility to combine the advantages of Delphi technique and group decision theory. It is worth to mention that it was beyond the scope of the present study to deal with various implications of the fair talent assessment and its management (as efficient job allocation, fair promotion, etc.)

The size of the expert panel was definitely a limitation that became visible when many experts have denied, delayed or, simply, not answered.

In principle, the cultural diversity of the respondents allows inter-cultural comparative studies. Still the number of respondents should be significant higher.

As far as suitability of the Delphi method, the authors do prefer – instead of giving a definitive verdict – to offer a list of advantages versus disadvantages – turned into recommendations related to each case or situation. At any rate it is recommended to try and test new options instead of avoiding them, fearing of failures; don't be afraid of failures but don't necessary fail! Or, in terms of the *Hamletian* inception question: Yes, the Delphi-type method is recommended *to be* used! Definitely.

References

Abi Abdallah, Reem (2018) *The fusion and integration of knowledge and talent management: The development and implementation of a universal talent score.* PhD Thesis. Bucharest, Romania: University "Politehnica" Doctoral School of Entrepreneurship, Business Engineering & Management.

Abi Abdallah, Reem (2016) Developing a methodology for assessing the Universal Talent Score (UTS). PhD Research Progress Report No.3, May 2016. Bucharest, Romania: University "Politehnica" Doctoral School of Entrepreneurship, Business Engineering & Management.

Abi Abdallah, R. (2017) The Universal Talent Score (UTS): Conducting an international Delphi study to assess professors' talent in higher education institutions. PhD Research Progress Report No.5, March 2017. Bucharest, Romania: University "Politehnica" Doctoral School of Entrepreneurship, Business Engineering & Management.

Adler, Michael and Erio Ziglio (Editors) (1996) *Gazing Into the Oracle: The Delphi Method and its Application to Social Policy and Public Health.* London and Philadelphia: Jessica Kingsley Publishers.

Basu, S. Schroeder, R.G. (1977) Incorporating Judgments in Sales Forecasts: Application of the Delphi Method at American Hoist & Derrick. *Interfaces*, 7(3): 18–27.

Arrow, K.J. (1950) A Difficulty in the Concept of Social Welfare. *Journal of Political Economy*, 58(4): 328–346.

Arrow, K.J. (1951) *Social Choice and Individual Values*. New York: John Wiley & Sons.

Bolognini, M. (2001) *Democrazia elettronica. Metodo Delphi e politiche pubbliche* (Electronic Democracy. Delphi Method and Public Policy-Making) (in Italian), Rome: Carocci Editore.

Brown, B.B. (1968) Delphi Process: A Methodology Used for the Elicitation of Opinions of Experts. Document No P-3925, September 1968. Santa Monica, CA: The RAND Corporation.

Brown, T.A. (1973) An Experiment in Probabilistic Forecasting. Report R-944-ARPA, July 1973. A Report prepared for: Defense Advanced Research Projects Agency. Santa Monica, CA: Rand.

Dalkey, N.C. (1969) The Delphi Method. An Experimental Study of Group Opinion. Report RM-5888-PR. Santa Monica, CA: RAND Corporation.

Dalkey, N. and Helmer, O. (1963) An Experimental Application of the DELPHI Method to the use of experts. *Management Science*, 9(3): 458–467.

Dator, James A. (Editor) (2002) *Advancing futures: Futures studies in higher education*. Westport, CT and London: Praeger Publishers, An Imprint of Greenwood Publishing Group, Inc.

Forsyth, D.R. (2006) Decision making, in Forsyth, D.R. (Editor) *Group Dynamics*, 5th Edition. Belmont, CA: Wadsworth, Cengage Learning, pp.317–379.

Green, K.C., Armstrong, J.S. and Graefe, A. (2007) Methods to elicit forecasts from groups: Delphi and prediction markets compared. *Foresight: The International Journal of Applied Forecasting*, 8: 17–20, Fall 2007.

Helmer-Hirschberg, O. (1967) Analysis of the Future. The Delphi Method. Report P-3558. Santa Monica, CA: RAND Corporation.

Hilbert, M., Miles, I., Othmer, J. (2009) Foresight tools for participative policy-making in inter-governmental processes in developing countries: Lessons learned from the eLAC Policy Priorities Delphi. *Technological Forecasting and Social Change*, 15(2): 880–896.

Linstone, H.A. and Turoff, M. (1975) *The Delphi Method: Techniques and Applications*. Reading, Massachusetts: Addison-Wesley.

McLaughlin, M.W. (1990) *The Rand Change Agent study revisited: Macro perspectives and micro realities*. Stanford, CA: Stanford University Press.

Moscovici, S., Zavalloni, M. (1969) The group as a polarizer of attitudes. *Journal of Personality and Social Psychology*, 12(2): 125–135.

Passig, D. (1997) Imen Delphi: A Delphi Variant Procedure for Emergence. *Human Organization: Journal of the Society for Applied Anthropology*, 56(1): 53–63, Spring 1997.

Peters, M.A. (2003) Educational Policy Futures. *Journal of Futures Studies*, 8(1): 39–52.

Peters, Michael A. and John Freeman-Moir (Editors) (2006) *Edutopias: New Utopian Thinking in Education*. Rotterdam, Taipei: Sense Publishers.

Rescher (1998) *Predicting the Future: An Introduction to the Theory of Forecasting*. Albany, NY: State University of New York Press.

Rohrbeck, R. (2010) *Corporate Foresight: Towards a Maturity Model for the Future Orientation of a Firm*. Heidelberg and New York: Springer Series, Contributions to Management Science.

Rowe, G. and Wright, G. (1999) The Delphi technique as a forecasting tool: issues and analysis. *International Journal of Forecasting*, 15(4): 353–375, October 1999.

Rowe, G. and Wright, G. (2001) "Expert Opinions in Forecasting. Role of the Delphi Technique." in J. Scott Armstrong (Editor) *Principles of Forecasting: A Handbook of Researchers and Practitioners*. Boston, MA: Kluwer Academic Publishers, pp.125–144.

Sackman, H. (1974) Delphi Assessment: Expert Opinion, Forecasting and Group Process. Report R-1283-PR, April 1974. A Report prepared for: United States Air Force Project RAND. Santa Monica, CA: RAND.

Schwarz, J.-O. (2008) Assessing the future of futures studies in management. *Futures*, 40(3): 237–246.

Slaughter, R.A. (1992) Futures studies and higher education. *Futures Research Quarterly*, 8(4), Winter 1992.

Tapio, P (2002) Disaggregative Policy Delphi: Using cluster analysis as a tool for systematic scenario formation. *Technological Forecasting and Social Change*, 70(1): 83–101.

Turoff, M. (1970) The Design of a Policy Delphi. *Technological Forecasting and Social Change*, 2(2): 149–171.

Ziglio, E. (1996) "The Delphi Method and Its Contribution to Decision-Making", in Michael Adler and Erio Ziglio (Editors) Gazing into the Oracle: The Delphi Method and its Application to Social Policy and Public Health. London and Philadelphia: Jessica Kingsley Publishers, pp.3–33.

PARENTS' AND COMMUNITIES' VIEW AND ATTITUDE TOWARDS TEACHERS IN RURAL MALAWI

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Abstract

In recent years, there has been an increased pressure on teachers to *reach and teach* all learners with accompanying expectations on higher standards for teachers. It may be argued that teachers' perception of support and validation from stakeholders may have a considerable impact on the quality of education and hence learners' performance. Thus a supportive environment for teachers, whether inside or outside of the school may be considered essential. In order to gain some perspective on the attitude towards primary school teachers it is important to answer questions such as how do teachers and head teachers collaborate? What is the relationship between teachers and parents? What is the community's view on teachers? For the purpose of this study, the attitude towards primary school teachers in Malawi was explored in four rural primary schools.

This study forms part of my doctoral research where I explore the interactions between teachers and different stakeholders in education. In my research I use socio-cognitive theory as the underlying theoretical approach to interactions where I explore personal- and environmental factors and how they influence our behaviour. In addition I use Bronfenbrenner's socio-ecology theory as my analytical tool for understanding interactions. Data for this part of my study were collected from April to July 2016 through semi-structured individual-, pair- and group interviews. Forty two interviews were conducted in total, ten at each school, in addition I interviewed the District education manager and the Director for basic education at the Ministry of Education, Science and Technology in Malawi, with 123 participants in total. Participants include four head teachers, 24 teachers, four primary education advisors, 19 parents, 20 local leaders, 17 members of Parent teacher associations, 16 members of School management committees, and 17 members of Mother support groups.

Main findings indicate a level of mistrust towards teachers from stakeholders whether they are parents, the community or primary education advisors. This mistrust is displayed in a strong conviction in the necessity of monitoring for instance teachers' performance, punctuality and treatment of learners. Teachers are presumed to be prone to laziness and not working hard enough. It may be concluded that there is a substantial need to bridge the relationship between teachers and stakeholders in education in those four rural primary schools in Malawi.

Keywords: Stakeholder's attitude, lazy teachers, monitoring teachers.

CHALLENGES CONFRONTING KINDERGARTEN TEACHERS IN THEIR FIRST YEAR OF TEACHING

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Abstract

Novice teachers' first year in the teaching field is a year of great expectations and anticipation, but it also engenders anxiety and lack of confidence. Research has addressed novice school teachers' induction processes, indicating that this first year represents a period of challenges, dilemmas and difficulties. However, little has been written about the first-year experiences of novice kindergarten teachers.

This research examined the novice kindergarten teacher's dilemmas and challenges during this critical first year and their attitudes towards the professional development workshop, relating to the relevance of the workshop in assisting the kindergarten teachers in coping with the dilemmas that arose from the field. The findings indicate that the novice kindergarten teachers experience similar dilemmas in their first year in the field to those experienced by school teachers. It was also found that the workshop was not a significant factor in helping the novice kindergarten teachers cope with this challenging experience. It is concluded that it is necessary to re-evaluate the workshop framework to make it a place of significance for the novice kindergarten teacher.

Keywords: Novice kindergarten teachers, kindergarten teachers' training, induction year.

1. Introduction

Statistics show that 10% of novice teachers will not return after their first year, with the dropout rate increasing to almost half in the first five years (Kaiser, 2011). The student-teachers expect to contribute significantly to their pupils and to their future workplaces. In reality, the transition from student-teacher to novice or in-service teachers is a period fraught with tension, anxiety and learning through trial and error, in addition first year teachers are expected to "hit the ground running". There is limited research that investigates this induction process for kindergarten teachers; the assumption of the writers being that the induction process and the professional development of kindergarten teachers is similar to that of primary and high school teachers.

The research described here aimed to investigate the transition from student-teacher to first year kindergarten teacher, specifically noting the novice teachers' challenges and difficulties, the extent to which a compulsory workshop that accompanied their first year of field work assisted their work and assimilation. This research was a pilot research, the research population was small, determined by the total number of participants in the workshop.

The transition from student-teacher to kindergarten teacher is extreme. One moment they are sheltered and accompanied by their pedagogical advisors in college and in the next moment they are in charge of 35 children and other staff members and are expected to know how to deal with anxious parents, who are sometimes of the same age as them!

A kindergarten teacher is expected to have knowledge concerning child development, management, disciplinary subjects, first aid, pedagogical knowledge appropriate for each stage in a child's development, and to know how to organize the day-to-day pedagogical activities and encourage children's play, all within a positive atmosphere. Additionally, the future kindergarten teacher should know how to identify children with special needs and how to enter into a significant dialogue with parents. Kindergarten teachers are also expected to act as educational leaders and experts on preschool education. (see Ministry of Education, n.d.). In addition, and unique to this system, a kindergarten teacher is considered the "kindergarten manager" from her first year. In most professions, including school teaching, the practitioner can only assume the responsibility of management after years of experience, and only after their work is recognized and appreciated by their superiors.

Little has been written about the specific professional development of kindergarten teachers. One well-known model proposed by Lilian Katz (1972) describes four periods in the kindergarten teachers' professional development: (1) Survival - first year; (2) Consolidation –second and third year; (3) Renewal - third and fourth year and (5) Maturity - fourth and fifth year. During the survival stage, the kindergarten teacher is asking "Can I make it to the end of the week?" "Can I really do this work day after day?" Survivors focus on their own needs and have little understanding of the needs of the children in their care. The teaching styles of the kindergarten teacher at this stage are usually teacher-orientated to allow them a feeling of control (Stroot et al., 1998). Jillian Rodd (2006) in her book suggests that novice kindergarten teachers may have difficulties in integrating practice and theory, or as Manlove indicates, they may become physically exhausted (Manlove, 1993); and some may leave the profession completely (Early Childhood Educators of British Columbia, 2012).

The induction stage is generally considered the most difficult of all stages. Difficulties indicated by novice teachers included: class discipline, pupils' motivation, pupils' diverse needs, relationships with parents, pupil evaluation, stress and many tasks to be completed, the knowledge needed to teach disciplinary subjects and many others (Veenman,1984).

To become a teacher or a kindergarten teacher is a process that necessitates tenacity and understanding, this is a complex process that can take years. To become a proficient kindergarten teacher, who is confident and able to meet work demands, challenges the teacher's previous belief system about what it is in reality to be a kindergarten teacher, and the student-teacher needs to realize that the first few years of practical work in the field are also part of the initial training. The significance of the present innovative research is that it attempts to reappraise the support system that student kindergarten teachers receive after their professional training and perhaps to try and close the gap between the ivory tower and the actual reality in the field.

2. Method

Participants in this study were kindergarten teachers in their first year of field work: 28 kindergarten teachers participated at the beginning of the academic year, and 23 teachers participated at the end of the year. Most teachers were working in the secular sector (21 teachers, 75%, at the beginning of the year, and 16 teachers, 70%, at the end of the year), while others worked in the religious sector (6 teachers, 21%, at the beginning of the year, and 4 teachers, 17%, at the end of the year), or in special education (one at the beginning of the year and two at the end).

Kindergartens in the secular sector usually had 21 to 35 children (19 kindergartens with 21 at the beginning of the year, and 12 kindergartens with 16 at the end of the year). Of the 6 kindergartens in the religious sector at the beginning of the year, four had less than 20 children and two had over 26 children. The special education kindergartens had less than 20 children each.

3. Instruments

The novice kindergarten teachers were asked to fill in a questionnaire, at the beginning and also at the end of the academic year, consisting of items that related to their attitudes concerning education as well as items that addressed challenges and dilemmas that were found to be relevant to the studied topic according to the literature. The respondents were also given the possibility to add their own open-ended comments or to describe their experiences. There were 12 items that elicited data to describe the difficulties the teachers were faced with, such as "preparing activities", "relationships with parents", "discipline issues". Each was rated on a 5-point scale from 'no difficulty at all' (1) to 'very great difficulty' (5). Correspondingly, participants rated the extent of help they received from their supervisor, regarding each difficulty, on a 5-point scale from 'no help at all' (1) to 'a very great extent of help' (5).

Internal consistency for difficulties: = 0.80
Internal consistency for received help: = 0.92

4. Results

Data regarding the difficulties that the teachers perceived that they faced and the extent of help they received from their supervisors, Differences in means and percentages are discernible between the beginning and the end of the year, yet they are non-significant due to the small sample size. The trends are described below.

Table 1: Difficulties experienced by the kindergarten teachers, and help received from the supervisors, in descending order (N = 28).

	Subject	Extent of difficulty		Help received from supervisor	
		M (SD)	% positive	M (SD) if difficulty experienced	% positive if difficulty experienced
.1	Discipline issues	3.25 (1.17)	27 (96.4)	2.44 (1.12)	18 (66.7)
.2	Teaching a heterogeneous class	2.64 (0.91)	26 (92.9)	2.21 (1.14)	15 (57.7)
.3	Preparing activities	2.36 (0.73)	25 (89.3)	2.74 (0.86)	22 (88.0)
.4	Organizing the kindergarten	2.25 (0.75)	24 (85.7)	2.00 (1.31)	11 (45.8)
.5	Motivating the children	2.32 (0.94)	23 (82.1)	2.24 (1.20)	14 (60.9)
.6	Organizing learning environments	2.21 (0.96)	22 (78.6)	2.24 (0.99)	15 (68.2)
.7	Teaching varied population	2.43 (1.14)	21 (75.0)	2.22 (1.06)	13 (61.9)
.8	Diagnosing the various levels in the children	2.15 (0.91)	21 (75.0)	2.22 (1.06)	12 (57.1)
.9	Leading outstanding children	2.00 (0.90)	20 (71.4)	1.83 (1.15)	8 (40.0)
.10	Relationships with the parents	2.00 (1.12)	17 (60.7)	2.46 (1.27)	9 (52.9)
.11	Team work	2.00 (1.22)	15 (53.6)	2.07 (1.22)	8 (53.3)
.12	The kindergarten inspector	1.81 (1.36)	11 (39.3)	2.11 (1.45)	4 (36.4)

5. Discussion and conclusion

The challenges that the novice kindergarten teachers encountered in this first critical year were similar to those indicated in extant literature: Class discipline, motivation of the pupils, different needs of the pupils, relationships with parents (Veenman,1984). The results show that discipline problems were the most common, 96.4% at the beginning of the year and 82% at the end of the year. even though the age of the children was between 3-6 years of age. The second most common difficulty was teaching heterogeneous classes, experienced by most kindergarten teachers throughout the year. Preparing activities was another difficulty, reported by 85% of the respondents, which was not found in the literature, perhaps because most of the literature deals with the transition of student-teachers to work in schools, where there is an organized compulsory curriculum. Such a curriculum does not necessitate the teacher's organization of the learning program.

Organizing the kindergarten and motivating the children were also not reported as difficulties in extant literature, whereas time management was, but did not emerge as a reported challenge in this research. This could also be a result of the fact that in kindergarten there is no expectation to " cover" certain areas of knowledge in a certain period of time as expected in a school environment. Organizing the learning environments was however another difficulty that was reported by 79% of the respondents at the beginning of the year at 52% at the end, which could indicate that the novice teachers had acquired a certain amount of experience and perhaps confidence during the year in addressing this issue. The finding that teaching diverse populations, and diagnosing the various levels of the children in their care was experienced as a difficulty by 75% of the novice kindergarten teachers , is in line with previous research findings (Veenman,1984).Unlike previous findings, in the present study the novice kindergarten teachers did not report communication with parents as a major challenge (Veenman,1984).This could be due to the fact ,that in the first year of transition most of the novice kindergarten teachers receive positions as kindergarten teachers for a small portion of the day,for example as kindergarten teachers in the afternoon session. This means that the main kindergarten teacher, who in fact is the manager of the kindergarten, deals with most of the communication issues with the parents in the mornings.

There was an increase in reports of difficulties with team work, by the novice teachers from the beginning of the year (54%) rising to 60% at the end of the year. This could be explained by the fact that there was a longer period of time for the team to work together, and perhaps the beginning of the year was a period of mutual acquaintanceship with each other and a novice kindergarten teacher would possibly more inhibited at the beginning of the year and less willing "to rock the boat", but in time would have gained more confidence to challenge other team members. Little difficulty was reported in the relationship with the kindergarten superintendent, either at the beginning of the year or at the end (reported by 35% at both measuring points), perhaps for a similar reason, that a novice teacher would not want to get into a conflict situation with the kindergarten superintendent, who is responsible for their final evaluation at the end of this critical year.

The novice teachers reported that the amount of support and assistance received through their supervisor at the workshop to help them cope with the identified difficulties was either low or moderate. These results raise questions about the efficiency of the workshop as a support system for the novice kindergarten teachers. This data also raises questions about which subjects are more relevant in kindergarten teachers' training or where to put the emphasis in the initial training. In this context, attention should be paid to the fact that most of the research population expressed difficulties with class discipline, or difficulties in organizing activities for a heterogeneous group.

The training of teachers is a long complex process including many components beyond the specific disciplinary content or teacher-training. A kindergarten teacher's training is especially important since these teachers build the educational foundations for the child that will later enter the public or private school systems. The induction process for kindergarten teachers necessitates several means of support to assist the novice teachers on their entry into the kindergarten education system in an optimal manner.

The research presented in this article described the difficulties encountered by novice kindergarten teachers in their first year of their teaching careers. We learn from this study that the induction process is a long process but there are several milestones at which it is possible to improve this process in order to form a more fortified new generation of graduates.

References

Kaiser, A. (2011). *Beginning teacher attrition and mobility: Results from the first through third waves of the 2007-08. Beginning Teacher Longitudinal Study. First Look*. NCES 2011-318. Jessup, MD: National Center for Education Statistics.

Katz, L. G. (1972). Developmental stages of preschool teachers. *The Elementary School Journal, 73*(1), 50-54.

Manlove, E. E. (1993). Multiple correlates of burnout in child care workers. *Early Childhood Research Quarterly, 8*(4), 499-518.

Rodd, J. (2012). *Leadership in early childhood*. McGraw-Hill Education (UK).

Stroot, S., Keil, V., Stedman, P., Lohr, L., Faust, R., Schincariol-Randall, L., & Richter, M. (1998). *Developmental stages of teachers. Peer assistance and review guidebook.* Columbus, Ohio: Ohio Department of Education.

Veenman, S. (1984). Perceived problems of beginning teachers. *Review of Educational Research, 54*(2), 143-178.

Ministry of Education (n.d.). *The preschool sector.* Jerusalem: Ministry of Education. [Hebrew] Retrieved from: http://edu.gov.il/minhalpedagogy/preschool/Pages/preschool-education.aspx

Early Childhood Educators of British Columbia, (2012). Vancouver, BC. Retrieved from: http://www.ecebc.c

HOW IS BULLYING PORTRAYED IN A COLLECTION OF SELECTED PICTURE BOOKS? A CONTENT ANALYSIS

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Abstract

Bullying is unwanted, aggressive by another that may inflict harm. It is a serious problem for children, adolescents, and young adults. It starts in preschool, increases in elementary school, peaks in middle school, often continues into high school, and is considered the most prevalent form of youth violence. Bullying crosses different cultures. No matter age or culture, bullying can result in long-term harm to individuals. This study shares findings from a content analysis of how bullying is portrayed across 126 picture books. Data collection focused on identity and characteristics of the bully and bullied, identity and portrayal of bystanders, and description of the context for bullying. Data analysis was qualitative, descriptive, and focused on constructing recurring patterns in the portrayal of bullying. Findings indicate that while males ranging in age from five to thirteen-years-old were predominately portrayed as bully and bullied with focus predominately on the bullied. Bullying was portrayed as repetitive, not a single act, and school as the common context for bullying.

Keywords: Picture books, bullying, research, portrayal, content analysis.

1. Introduction

The purpose of this study was analyze selected picture books on the topic of bullying to address the research question, "How is bullying portrayed in a collection of selected picture books?" The rationale for the study was that bullying, in and out of school, has been and continues to be, a serious problem for many individuals, especially children, adolescents, and young adults. In response, all fifty states in the United States have passed laws against bullying. Likewise, public school districts across fifty states have developed school policies to prevent bullying in classrooms and on school grounds. When bullying does occur, most often suspension and related exclusionary techniques are the default response by the school staff and administrators. However, these approaches do not appear to be effective and may actually result in increased academic and behavioral problems for youth. Unfortunately, instances of bullying are on the rise, so much so, that today it is, "appropriately considered to be a serious public health problem" (Rivera & Le Menestrel, 2016, p. 1).

Bullying starts as early as preschool, increases through elementary school, peaks in middle school, often continues into high school and is considered to be the most prevalent form of youth violence (Smokowski & Kopasz, 2005). Bullying, also referred to as peer victimization, crosses different age ranges and cultures. Although rates of involvement in bullying vary between cultures, in a survey of 66 countries, it was found that on average 31.2% of adolescents surveyed had experienced peer victimization within the past two months, with rates as high as 60% in some countries (Due & Holstein, 2008). No matter the age or the culture, bullying can result in devastating and long-term physical, psychological, social, or educational harm to individuals.

2. Design

Much research has been conducted in education and library science journals on picture books with bullying themes (Flanagan, et al., 2013). Many studies are based on a bibliotherapy perspective. In general, bibliotherapy is a field of study in which selected reading materials are used to help a person solve a personal problem. Of these studies a handful are content analysis studies, conducted mostly at the preschool and primary grade levels, in which emphasis is placed on the potential of selected books to help individual students develop coping strategies for dealing with bullying behavior. Similarly, the design of this study is content analysis; however, this study is grounded in a curricular and instructional perspective, rather than a bibliotherapy perspective.

3. Objective

This study sought to build on findings from previous content analysis of selected picture books on bullying but differs in audience, intent, and focus. Unlike bibliotherapy, which is mostly clinical and focuses on helping individuals deal with stressful situations, the audience for this study was teachers and students, K – 12. Moreover, the intent was not to share findings for intervention with one individual student, but prevention with classes of students. Finally, the focus was on exploring implications for the development and implementation of curriculum and instruction by using picture books with bullying themes.

4. Methodology

The methodology for this research project is content analysis. Content analysis is a qualitative research methodology that focuses on describing and interpreting written artifacts (White & Marsh, 2006). It involves the inspection of patterns in written texts, often drawing on combinations of inductive, deductive, and abductive analytical techniques" (Hoffman, et al., 2011, p. 29). The goal of content analysis is to generate "knowledge and understanding of the phenomenon under study" (Hsieh & Shannon, 2005, p. 1278). Here, written texts are operationally defined as a collection of self-selected picture books that deal with bullying.

Data collection involved a total of 126 picture books. This total represents a sample of convenience. Both investigators possess collections of literature, especially picture books, which they use when teaching their respective classes. The investigators searched their collections and additional books available in local libraries, book stores, and from online venues based on twelve criteria:1) books are picture books e.g. books that contain traditional story elements; 2) the picture books are fiction or nonfiction, but not informational; 3) books are narratives; 4) the words bully, bullied, or teasing are included in the title e.g., or 5) the words bully, bullied, or teaching were mentioned in the synopsis for the book, but not in the title or 6) the word bully, bullied, and teasing are not in the title or the synopsis but address bullying in the narrative; 7) picture books do not deal with sibling rivalry; 8) picture books are appropriate for grades K – 8; 9) picture books are accessible to teachers e.g. no rare or out-of-print books; 10) no digital books e.g. Kindle, IPad; 11) no stories published in basals or anthologies; 12) no self-published books.

5. Data analysis

The data set consisted of 126 picture books. The unit of study was a picture book. Data analysis was qualitative, using the content analysis methodology. The analysis focused on creating numerical findings and constructing patters across the data set. Data analysis occurred in seven stages; 1) each picture book was read completely without stopping to gain a preliminary familiarity with the book and also some initial impressions on portrayals of bullying; 2) each book was discussed by the researchers to determine agreement on the grade bands, focusing on factors such as the age (or reasonable approximation) of the bully, age of bullied, story setting, type of bullying, as well as recommended grade levels specified by the publisher, lexile scores, etc.; 3) each book was divided into one of two grade bands: preschool through grade four and grade five through grade eight; 4) all picture books were read and discussed by the researchers to reach agreement about portrayal of bullying; 5) researchers reached consensus on four categories and recorded responses on an Excel spreadsheet; 6) the process continued until researchers completed a content analysis of all 126 picture books; 7) the completed Excel spreadsheet was analyzed by researchers. In this analysis, they identified recurring patterns in the data, developed findings, and formulated implications and questions for future research.

6. Findings

The following are major findings based on a descriptive analysis of four categories: bully, bullied, bystander, and context. Table 1 presents findings when analyzing the portrayal of the bully. The majority of those seen as the bully in the 126 picture books were male (67 = 53.2%). The race of the bully was not as evident; however, Caucasians were the highest in number (47 = 37.3%) of those known.

Table 1. Portrayal of the Bully.

Characteristic	Number	Percentage
Males	67	53.2%
Females	28	22.2%
Portrayed neither as male or female	09	7.1%
Caucasian	47	37.3%
African American	06	4.8%
Hispanic	04	3.2%
Other	34	27.0%

The results of the portrayal of the bullied were similar (see table 2). Males were portrayed as being bullied more than females (67 = 54.1%). The majority of those being bullied were Caucasian (49 = 39.5) when comparing each group individually.

Table 2. Portrayal of the Bullied.

Characteristic	Number	Percentage
Males	67	54.1%
Females	37	29.8%
Portrayed neither as male or female	09	7.1%
Caucasian	49	38.9%
African American	06	4.8%
Asian	06	4.8%
Hispanic	04	3.2%
Other	39	31.0%

The next analysis considered if the bully or bullied was focused on predominantly in the picture book (see table 3). The findings indicated that the bullied was focused on more than the bully (73 = 57.9%).

Table 3. Focus: Bully or the Bullied.

Characteristic	Number	Percentage
Bully	19	15.1%
Bullied	73	57.9%
Equal portrayal	23	18.3%

As shown in Table 4, the majority of the books analyzed showed that there was at least one bystander (87 = 69%). The number of bystanders varied. However, there were more books where five or more bystanders were portrayed than books where one, two, three, or four bystanders were portrayed when comparing each category individually (30 = 23.8%). Females were portrayed as the bystanders in most categories.

Table 5 presents the results when the context of the bullying was analyzed. The school (28 = 22.2%) and school grounds were the most prominent (35 = 27.8). The classroom was also portrayed but not to as much of an extent (4 = 3.2%).

Table 6 presents the results from an analysis focusing on if the act of bullying was a one-time act or an act that was repeated. An overwhelming majority of the books portrayed bullying as being an act that was repeated (98 = 77.8%).

Table 4. Portrayal of the Bystander.

Characteristic	Number	Percentage	Males	Percentage	Females	Percentage
Bystander portrayed	87	69.0%				
No bystander portrayed	27	21.4%				
Characteristic	Number	Percentage	Males	Percentage	Females	Percentage
Number of bystanders: 1	16	12.7%	13	10.3%	25	19.8%
Number of bystanders: 2	12	9.5%	11	8.7%	08	6.3%
Number of bystanders: 3	09	7.1%	04	3.2%	06	4.8%
Number of bystanders: 4	05	4.0%	04	3.2%	06	4.8%
Number of bystanders: 5 or more	30	23.8%	30	23.8%	30	23.8%

Table 5. Context of Bullying.

Context	Number	Percentage
School grounds	35	27.8%
School	28	22.2%
Community	15	11.9%
Neighborhood	13	10.3%
Classroom	04	3.2%
Other	19	15.1%

Table 6. The Act of Bullying.

Context	Number	Percentage
Single Act	16	12.7%
Repetitive Act	98	77.8%

7. Discussion

The goal of conducting this content analysis was to provide data to help in the creation of curriculum and the design of instruction for the future. Some of the results may be helpful when thinking of this goal while other results may stimulate further inquiry and exploration.

The portrayal of the bully and the bullied were similar in that the majority of the picture books focused on both the bully and the bullied as being males. Also, the majority of the bullies and the bullied were Caucasian (white). However, for the most part, the bystanders were mostly female. These findings may inspire conversation around questions such as, what are we seeing in our schools today? Are there more males bullying and being bullied than females? Are most of these individuals Caucasian (white) or is there simply more books focusing on characters who are Caucasian (white)?

Also, we found it interesting, and admittedly somewhat surprising, that there were more books that focused on the bullied than the bully. This seems to indicate that perhaps the books are focusing more on the action of bullying itself than the reasons behind the bullying. This is alarming because of the consequences bullying has. Without spending time considering what leads up to an individual bullying another individual, we may never improve this situation. Obviously knowing the reasons behind the bullying would help create a curriculum and design instruction that would better serve our students.

The percentage of books that had one or more bystanders was also alarming, and again somewhat surprising, as was the number of books with five or more bystanders in them. How often do we talk with our students about what to do if they see someone else being bullied? Are they courageous enough to take a stand? Do we teach our students how important this is? Self-reflection is a valued part of learning. It seems that these topics could serve as opportunities for this.

In most of the picture books the bullying took place outside of the classroom and predominately in the school and on school grounds. Portraying bullying at school and on school grounds was not particularly surprising. What was surprising that most of the picture books did not portray bullying in the classroom, a common context for students to bully other students.

Not surprisingly, the majority of picture books most often portrayed the act of bullying, not as a one-time event, but as repeated again and again. How does a context allow bullying to be a repeated act? What makes the bully confident, if not immune, to repeated bullying? What would stop not only repeated bullying, but also single acts of bullying?

8. Conclusion

Finally, some of the major findings from this content analysis were that the majority of the picture books focused on both the bully and the bullied as being males, the majority of the bullied and the bullies were Caucasian (white), significantly more picture books focused on the bullied than the bully, many picture books included bystanders, bullying was portrayed predominantly at school and on school grounds, and the majority of picture books most often portrayed the act of bullying, not as a one-time event, but as repeated again and again.

References

Due, P., & Holstein, B. (2008). Bullying victimization among 13 to 15-year old school children: Results from two comparative studies in 66 countries and regions, *Journal of Adolescent Medical Health*, 20(2), 209-221.

Flanagan, K.S., Vanden Hoek, K.K., Shelton, A., Kelly, S.L., Morrison, C.M., & Young, A.M. (2013).Coping with bullying: What answers does children's literature provide? *School Psychology International,* 34(6), 691-706.

Hsieh, H., & Shannon, S.E. (2005). Three approaches to qualitative content analysis, *Qualitative HealthResearch, 15*(9), 1277-1288.

Hoffman, J. V., Wilson, M. B, Martinez, R. A., & Sailors, M. Content analysis: The past, present, and future. In N. K. Duke & M. H. Mallette (Eds) (2011). *Literacy research methodologies,* (2nd ed.). (pp. 28-49). New York: The Guilford Press.

Rivara, F., & Le Menestrel, S. (Eds.) (2016). *Preventing Bullying Through Science, Policy, and Practice.*Washington, DC: The National Academies Press.

Smokowski, P.R., & Kopasz, K.H. (2005). Bullying in school: An overview of types, effects, familycharacteristics, and intervention strategies, *Children in Schools,* 27(2), 101-109.

STRUCTURAL AND CONTENT TRANSFORMATION OF THE VOCATIONAL TRAINING SYSTEM IN HUNGARY AFTER 2010

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Abstract

It was a priority in the programme of the government, which took office in 2010 (and has been in power ever since), to transfer the vocational training system and to introduce a dual vocational training system in order to create competitive vocational education and training. The reasoning behind this was understandable and generally known: the lack of well-trained workforce was one of the major obstacles in the way of the establishment of large foreign companies and also the development of domestic small and medium-sized businesses in Hungary. A significant milestone during the transformation process starting in 2010 was the adoption of Act CLXXXVII of 2011 on vocational training, which entered into force on 1 January 2012, and which created new ground for, and transferred the vocational training system that functioned earlier.

In my study the interventions in vocational education and training policy performed after 2010 and the process and results of the transformation of the vocational training system with special regard to the features of dual vocational training will be introduced and analysed through the major milestones.

Keywords: Vocational training, dual training system, transformation process, policy interventions.

1. Introduction

The transformation processes of vocational training have been continuously subject to changes during the past 7 years and continue to do so also at present. As a result of the transformation processes the decentralised vocational system that functioned earlier was replaced by a highly centralised management and financing mechanism and an institutional system operated predominantly by the state. The content of vocational training became more strictly regulated, and a dual vocational training system was introduced. These measures were deemed necessary to better satisfy the needs of businesses, to increase the popularity of vocational training and to boost the number of stakeholders involved in vocational training thus to provide impetus for economic development.

2. Substantial transformation of the governance of the vocational training system

As a result of the Act on public education and vocational training the maintenance, governance and financing system of school-based vocational training – together with the whole system of public education – changed radically compared to the system that functioned earlier. Earlier – similarly to the whole of the public educational system – the maintenance of school-based vocational training was the responsibility of the local municipalities, for which the state allocated per capita funding. As a result of the new educational policy introduced in 2011 the maintenance of public education and school-based vocational training was transferred to the responsibility of the state in 2013. The institutions, which were maintained by the local municipalities until that year were then maintained by the state in the new system.

Parallel with the above changes in maintenance, the operation and structure of the vocational institutions also changed: the Government created centres by merging individual vocational institutions on a regional basis. On 1 July 2015 44 vocational training centres were established with 370 member institutions maintained by the Ministry of National Economy.

As a result of educational policy changes the Government's expenditure on education significantly decreased as % of GDP; from 4.7% in 2010 to 3.9% in 2013. The expenditure on upper secondary education decreased by 40% (Table 1) between 2010 and 2013 (there have been no data available in public databases on this matter after 2014).

Table 1. Public expenditure on upper secondary educational institutions in Hungary.

	At current prices, million HUF	As a % of GDP
2010	254,311	1.0
2011	239,395	0.9
2012	224,632	0.8
2013	179,495	0.6

Source: Ministry of Human Capacities (2015)

The international position of vocational training is reflected by the volume and rate of state support it receives. According to comparative data, the rate of state support as a % of GDP is higher in most European countries than in Hungary. According to Eurostat data (Eurostat 2017) in Hungary the rate of state support provided by the state for vocational training expressed as a % of GDP is only 0.3%, which is a very low rate compared to international standards.

3. A core element of the reform of vocational training – the introduction of dual VET

Dual vocational training is a vocational training system in which, recognising mutual interests, the state and various economic players share the responsibilities and costs relating to vocational training. This means that in dual vocational training systems theoretical training is performed in vocational schools maintained by the state or by various churches, while practical training is provided by enterprises. The Chamber plays a role of primary importance as a mediator, process manager and co-ordinator between the schools and enterprises.

The dual training system in Hungary was developed based on the model and experience of the dual system in Germany however the local social, economic policy and education policy features were also taken into consideration. One of the major differences between the two systems is that while in Germany the trainees are dominantly regarded as employees, in Hungary they are primarily in student status. A vocational trainee in Hungary attends a vocational school as a first step, later on this individual can conclude an apprenticeship training contract with a practical training entity outside the school system. In the German system a student as a first step establishes formal employment with an enterprise, which then organises practical training for this individual. Following this, this individual enrols in a vocational school, where theoretical training is provided.

Dual training is not a novelty; it has a long history also in Hungary. Prior to the changes in the political system skilled workers training lasted three years, during which apprentices attended school and worked at enterprises in weekly shifts, and the enterprises provided the practical part of training in those days (those enterprises were large, "socialist" companies). The training conducted on the basis of the new type of dual vocational training model, which was introduced at every vocational school on 1 September 2013 also lasts three years (before 2012 there were 4-year training programmes at vocational schools), and the students study general subjects (for one year) and also vocational subjects (for two years) starting both in grade one. With this career orientation and the beginning of vocational training were shifted back to 14 years of age, which is what this situation was like before 1998 (and, prior to this, before 1989). The vocational school programmes provide ISCED 353 level vocational qualifications, which are listed in the National Vocational Qualification Register, and which are recognised by the state however they do not provide a secondary school leaving certificate therefore the students cannot directly continue their studies in higher educational institutions unless they acquire a secondary school leaving certificate later. The Government made an attempt to mitigate this "dead end"-character of dual vocational training by a measure enacted in September 2016, which provides an opportunity for students, who acquired vocational qualifications earlier, to prepare for a secondary school leaving exam in two academic years.

Dual training is based on the system of apprenticeship training contracts, which are concluded between the students and the employer entities that provide practical training. These contracts are counter-signed and recorded by the local branches of the Hungarian Chamber of Commerce and Trade. Enterprises providing practical training can receive apprentices with an apprenticeship training contract, if they are listed in the relevant register of the Hungarian Chamber of Commerce and Trade or in that of the Hungarian Chamber of Agriculture.

The apprentices are in legal relationships with their schools however activities under apprenticeship training contracts are qualified as employment therefore the provisions set forth in the Labour Code are the guarding principles regarding the practical training part of vocational training. In this regard during the training period within the framework of apprenticeship training contracts apprentices are entitled to the same rights as any employee as set forth in the Act on the Labour Code (Article (7) § 26 of Act CLXXXVII of 2011). The apprentices receive monthly remuneration (similar to wages)

during the training period, the average amount of which is 15% of the all-time statutory minimum wage (in 2018 the statutory minimum wage amounts to HUF 138,000/month ~ EUR 446/month).

The Government highly prefers training based on apprenticeship training contracts; a goal set in 2015 was to increase the number of students participating in secondary dual vocational training to 70 thousand by 2018. Based on current data it seems quite certain that this goal cannot be reached by 2018 in spite of the fact that the number of students with apprenticeship training contracts has continuously been increasing during the past few years. (Table 2).

Table 2. Number of students participating in vocational school programmes and number of students with apprenticeship training contracts.

Academic year	Number of students in regular vocational school courses (ISCED 353)	Number and ratio of students with apprenticeship training contracts (%)
2010/2011	129,421	41,047 (32%)
2012/2013	117,543	41,225 (35%)
2014/2015	92,436	44,267 (48%)
2016/2017	78,200	46,356 (59%)

Source: Ministry of Human Capacities 2017 and ISZIR

Catering, trade and so-called other services are the most popular areas in which the number of apprenticeship contracts is the highest. Within these areas vocational qualifications for occupations such as cook, waiter, convenience store sales assistant, bakers, convenience store sales assistants, meat process worker, hairdresser enjoy utmost popularity, and for these careers several thousands of apprenticeship contracts are concluded every academic year.

It is an indispensable condition for the extension of dual training that more and more enterprises join the area of vocational training. At present only a small number of enterprises participate in vocational training. These days the number of enterprises providing practical training is between 7 and 8 thousand (2% of all the enterprises). The Government wishes to increase this number to 20 thousand by 2018. (Hungarian Chamber of Commerce and Industry 2015). Reflecting the structural features of Hungary's economy, micro enterprises (39%) and small enterprises (29%) represent the highest ratio of enterprises that provide practical training under apprenticeship training contracts.

Figure 1. Distribution of apprenticeship training contracts according to enterprise type.
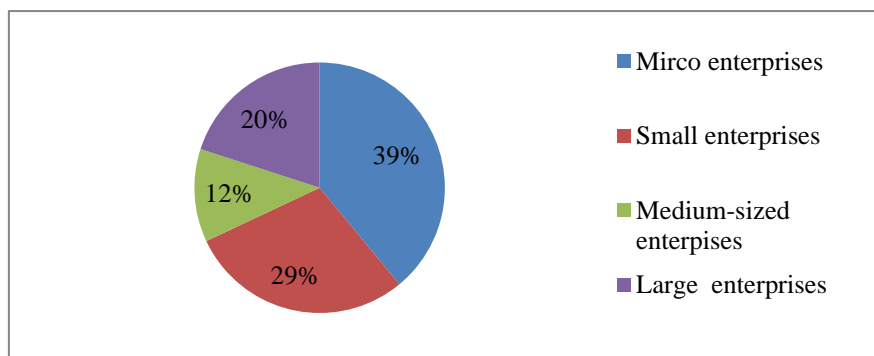
Source: Hungarian Chamber of Commerce and Industry 2015:23

The Government is attempting to provide a tax reduction for the enterprises to participate in vocational training. The other incentive for advanced learning for qualifications is the vocational education and training stipend the Government provides for students studying in regular vocational schools to acquire their first vocational qualification for in-demand occupations. The aim of this measure is also to urge the students to choose occupations that are especially important from the perspective of the national economy (eg. carpenter, joiner, tinsmith, floorer, electronic technician, building and construction fitter, CNC operator, intern nurse, welder, meat process worker, baker, etc.) to provide an incentive for them for better learning outcomes in preparation for these occupations.

In spite of the priorities set by the Government the number of students attending vocational schools and vocational secondary schools decreased significantly after 2013. The number of students attending regular courses at vocational schools fell to a historical low number of below 80 thousand by 2015 (See Table 2).

The ratio of students participating in vocational training is very low also compared to international data. In Hungary at secondary level in public education (level ISCED3) 76.8% of students were in general, not vocational-type education, while 23.2% participated in vocational-type education in 2015. (Figure 2).

Figure 2. Share of students in vocational education programmes, 2015 (%).
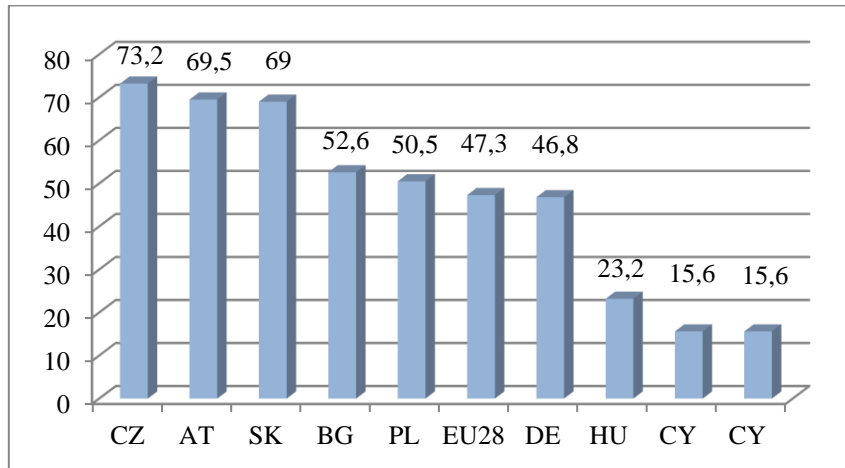
Source: EUROSTAT (2017a)

4. Content regulation of vocational training

One of the most radical measure taken in the transformation of the content of vocational training was that in the new 3-year dual vocational training system the ratio of practical training increased significantly reaching 66% compared to the situation earlier, while the number of lessons in vocational subjects and especially in general subjects decreased significantly (34%).

Table 3. Distribution of general education and occupation-specific subjects based on the framework curriculum of three-year secondary vocational school programmes (number of hours per week).

Subjects	1st grade (36 weeks)	2nd grade (36 weeks)	3rd grade (31 weeks)
General subjects total	18	11	9,5
Vocational subjects total	17	25	25,5

Source: Decree on a Framework curriculum 22/2016 (25 August) for secondary vocational school programmes issued by the Ministry of Human Capacities.

In dual vocational education the focus is on the development of competences relating to special occupations to the detriment of the development of general competences. This cannot be effective if only because of the fact that most career entrants find jobs not in their special vocational areas, and those, who remain in the vocational areas they are originally trained for, may also change vocational occupations several times during the expected five decades in their active, working careers. Apart from this, the determination of occupations for several years in advance that may be required by the labour market is rather uncertain, and when these occupations are determined at county level, the need for mobility is not considered, either.

In the new vocational training model the system of examinations has also changed significantly. The most important change compared to the previous system is that the new, complex vocational examinations have been simplified and shortened. This is the consequence of a measure that the modular exams conducted earlier (the content of which was regulated per module) have been replaced by complex vocational examinations.

Although for the time being it has an administrative function and does not have a forming impact on the structure and content of vocational training in Hungary however it is important to mention that a National Qualifications Framework was developed in 2015, in which qualifications that may be acquired in Hungary are listed ranging from public education throughout higher education, adult learning, and also vocational training and doctoral studies. The Hungarian National Qualification Framework, following the structure of the European Qualifications Framework, contains eight levels but the description of qualifications in Hungary is described by four descriptors (knowledge, skills, attitude, autonomy and responsibility) on each level.

A significant part of vocational qualifications acquirable in organised training has already been categorised in various levels in the HuQF (Table 4).

Table 4. Qualifications on HuQF levels.

NQF levels	Type of qualifications	EQF levels
8.	PhD/DLA (doctor of liberal arts)	8.
7.	University master degree (MA/MSc)	7.
6.	University bachelor degree (BA/BSc) Advanced VET qualifications (built on higher education diploma)	6.
5.	Advanced VET qualifications (higher VET programmes – short cycle) Postsecondary VET qualifications (based on upper secondary school leaving examination)	5.
4.	Certificate for upper secondary school leaving examination Upper secondary VET qualification	4.
3.	Leaving certificate and VET qualification (for SEN students) Lower secondary VET qualifications	3.
2.	Primary school leaving qualification (primary level educational attainment) (eight years) Lower secondary VET qualifications	2.
1.	Certificate after six grades of primary school	1.

Source: Cedefop 2017

5. Conclusion

Following the change in Government in 2010 the vocational system was transferred based on the opinions of the role players in Hungarian economy, among them mostly based on the input by the Hungarian Chamber of Commerce and Industry. In principle the strategic goal aimed to strengthen dual vocational training, to increase the role of enterprises in vocational training and by this to ensure work experience that students can acquire in life-like conditions is a correct goal, which has been justified by several international endeavours. A question however is what sustainable outcomes this transformation, which was enforced by direct educational policy interventions and administrative measures will yield in the long, or even in the short run. The reform launched in 2010 is in progress even today, the total transformation of the vocational system is expected to conclude in 2018. The effects and outcomes of the reform of the vocational training system may be objectively assessable in 5-10 years from now.

References

Cedefop (2017): *Hungary - European inventory on NQF 2016.* http://www.cedefop.europa.eu/en/publications-and-resources/country-reports/hungary-european-inventory-nqf-2016 (Accessed: 03 March 2018)

Eurostat (2017) *Public expenditure on education by education level and programme orientation - as % of GDP* http://ec.europa.eu/eurostat/web/products-datasets/product?code=educ_uoe_fine06 (Accessed: 03 March 2018)

Eurostat (2017a): *Share of students in vocational education programmes, 2015* http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Share_of_students_in_vocational_education_programmes,_2015_(%25)_ET17.png (Accessed: 03 March 2018)

Hungarian Chamber of Commerce and Industry (2015) *With Dual Training in the World of Work.* Budapest, Hungarian Chamber of Commerce and Industry.

ISZIR: *The Internet-based Integrated VET Information System* http://www.isziir.hu/_frontend/index.php?module=etalon_tanuloszerzodesek&sub=16 (Accessed: 03 March 2018)

Ministry of Human Capacities (2015) *Statistical Yearbook of Education 2013/2014.* http://www.kormany.hu/download/c/48/50000/Oktat%C3%A1si_%C3%89vk%C3%B6nyv_2013_2014.pdf (Accessed: 03 March 2018)

Ministry of Human Capacities (2017) *Statistical Yearbook of Education 2015/2016.* http://www.kormany.hu/download/0/83/f0000/Koznevelesi_statisztikai_evkonyv_2015_2016.pdf (Accessed: 03 March 2018)

THE ROLE OF TEACHING PRACTICUM ON THE PROFESSIONAL DEVELOPMENT OF MATHEMATICS STUDENT TEACHERS FROM THE CENTRAL UNIVERSITY OF TECHNOLOGY, FREE STATE

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Abstract

Teaching practicum forms the integral part of teacher training. This study explores mathematics student teachers' views on the role of teaching practicum on teacher professional development. Group interviews and a questionnaire were used to collect data. A total of 44 senior mathematics students undergoing six months teaching practicum participated in this study. Results indicate that, overall, mathematics student teachers at the Central University of Technology regard teaching practicum as an essential contributor to their professional development and preparation for work expected of them in South African secondary schools. Participants also identified some concerns, such as the way micro-teaching is utilized to prepare them for teaching practicum. The paper provides suggestions to improve the identified areas of the practicum offered by the Central University of Technology.

Keywords: Student teachers, teaching practicum, professional learning and development, micro-teaching.

1. Introduction

Teaching practicum, sometimes referred to as practice teaching, teaching practice, student teaching, is a central component and one of the most important aspects of any teacher education program (Farrell, 2008; Darling-Harmmond, 2006). It is offered to student teachers within the scope of professional knowledge. It is a culminating experience in teacher preparation. It provides opportunity to beginning teachers to become socialized into the profession (Fulorng, Hist and Pocklington, 1988), as it embraces all the learning experiences of student teachers in schools. The term teaching practice, according to Marais and Meier (2004) represents the range of experiences to which student teachers are exposed when they work in classrooms and schools. In South Africa, Higher Education Institutions (HEIs) that offer initial Teacher Education (ITE) programs require, in terms of education policy documents (such as the Integrated Strategic Planning Framework for Teacher Education and Development in South Africa, 2011-2025 and The Minimum Requirements for Teacher Education Qualifications, 2011), that their student teachers take part in teaching experience in schools, where they can interact with the realities of classroom teaching and the school context (Schoema & Mabunda, 2012). This work is an important but challenging part of teacher training, especially in developing countries such as South Africa where the effectiveness of the practicum can be diminished or eroded by geographical distance, isolation, low and uneven levels of teacher expertise, and highly structured (rigid) system of schooling and teacher training (Ismail, Halse and Buchanan, 2000). According to Akbar (2002) and Okeke, Abongdia, Adu, van Wyk and Wolhuter, (2016)., the followings are the objectives of practice teaching: 1) To provide the prospective teachers with an opportunity of establishing an appropriate teacher pupil relationship. 2) To provide an opportunity for evaluating the student potential as a teacher and suitability for the teaching profession. 3) To develop personal relationship with others: administrators, teachers, parents and students. 4) To provide the future teacher with practical experience in school to overcome the problems of discipline and enable him / her to develop method of control. 5) To provide with an opportunity to put theories into practice and to develop a deeper understanding of educational principles and their implication for learning. 6) To enable the student teachers effectively to plan and prepare lessons. 7) To develop skill in the use of fundamental procedures, techniques and methods of teaching. 8) To develop desirable professional interests, attitudes and ideas relative to teaching profession. 9) To enable student teachers to acquire desirable characteristics / traits of a teacher and to display appropriate behavior. 10) To provide student teachers with an opportunity to have teaching

evaluated and to gain from the benefits of constructive criticism. 11) To provide an opportunity for self evaluation and to discover own strengths and weaknesses. 12) To develop skills in future teachers related to teaching like fluent speaking, meaningful reading, using blackboard and other teaching material. 13) To provide an opportunity to liaise with school environment, its functioning and with community and its resources. 14) To provide for the exchange of ideas and methods between practicing school and teacher training institution, by teacher training institutions' staff and students, perceiving new ideas material and equipment in use in practicing schools and introducing new ideas, material and equipments into the school.

1.1. The teaching practicum

According to The Minimum Requirements for Teacher Education Qualifications (2011), in a full-time contact program, student teachers should spend a minimum of 20 weeks and a maximum of 32 weeks in formally supervised and assessed school-based practices over the four-year duration of the degree. In any given year, a maximum of 12 such weeks could be spent in schools, and at least three of these should be consecutive. At the Central University of Technology, duration of teacher education program is four years. Prior to the teaching practicum student teachers undergo microteaching practice where they are afforded an opportunity to practice and acquire teaching skills one by one. In their second year of study, student teachers are afforded an opportunity to observe mentor teachers' or classroom teachers' methods of teaching, classroom management techniques for a period of two weeks with the aim of collaborating and learning about teaching. In their third year of study, student teachers are placed in schools for six weeks where they are gradually exposed to formal teaching by their mentor teachers. Lecturers from the university visit the student teachers in the fourth week of this session to evaluate their teaching competence and give individual feedback. In the fourth year of study, the student teachers undergo a longer internship of twenty four weeks where they work under the supervision of the mentor teacher, the head of department and the school principal.

1.2. Student teachers' professional development

Foulds (2002) argues that there is a need for school-based development for unqualified and under-qualified teachers if they are to change their practices significantly. Becoming a professional teacher really begins when one is still undergoing the period of initial teacher training. The professional development of teachers refers to the long term process that includes regular opportunities and experiences planned systematically to promote growth and development in the profession (Villegas-Reimers, 2003). Teachers' ability to meet the complex and challenging demands of work successfully depends on their professional preparation. Teaching practice is a component of initial-teacher preparation that makes student teachers more adept, confident and productive in the classroom. During this period student teachers are introduced to the profession in the setting where they implement their knowledge and skills and have the support of the experienced and theory-based knowledge (Villegas-Reimers, 2003). The integration of essential teacher knowledge and skills promotes deep teacher learning and effective changes in practice (Timperley, 2008). The purpose of nurturing professional growth is to ensure that student teachers grow in their ability to make decisions about pedagogical approaches, critique their own approaches and improve the facilitation of learning (Okeke, Abongdia,adu, van Wyk & Wolhuter, 2016).

Theory and practice are integrated during teaching practicum. They are afforded an opportunity to translate their acquired knowledge of teaching into practice (Taole, 2015). T is during this period that they are afforded an opportunity to prepare for and learn from the workplace. They practice teaching approaches, methods, strategies, principles and techniques that they learnt in their formal education classes at university. In their quest to achieve this they grow professionally. Timperlry (2008) argues that:

> In effective professional development, theories of curriculum,
> effective teaching, and assessment are developed alongside their
> applications to practice. This integration allows teachers to use
> their theoretical understandings as the basis for making ongoing,
> principled decisions about practice (p:11).

One of the characteristics of professional development is that it is perceived as a process that takes place within a particular context. Contrary to the traditional staff development opportunities that did not relate "training" to actual classroom experiences, the most effective form of professional development is that which is based in schools and is related to the daily activities of teachers and learners (Villegas-Reimers, 2003). Teaching practicum is important for the student teachers in that it makes them feel like teachers as they engage with activities of teachers and learners and positively changes their ideas

about teaching. Change is a very complicated process. A program, such as teaching practicum, that takes that into consideration is recognized by student teachers. Student teachers are willing to improve their practice and expect such a program to help them do so. Teaching practicum also helps student teachers to obtain experiences of proficiency such as communication, classroom management, and understanding learners' social and cognitive background (Gorgoretti & Pilli, 2012).

Another characteristic of professional development is that it is a collaborative process (Darling-Hammond and McLaughlin, 1995). Even though there may be some opportunities for isolated work and reflection as is the case during teaching practicum, most effective professional development occurs when there are meaningful interactions. During teaching practicum, student teachers interact with mentor teachers, administrators, parents and other community members.

Mentor teachers play a crucial role in the professional development of student teachers. The mentoring process involves a person with a serving and inspirational attitude (mentor teacher), who sees the professional development and leadership potential in a still-to-be student teacher (Taole, 2015). The mentor teacher is normally somebody who is senior in the school taking interest and helping with the student's career path. Mentoring is therefore a positive mechanism for developing management, communication, and organizational skills. Mentor teachers contribute significantly to the professional development of student teachers by helping them to understand school activities and practices; providing them with information about the school policies, regulations and resources; demonstrating various teaching techniques and strategies, encouraging them to evaluate their own progress using the reflective process, and providing feedback and advice on a regular basis (Taole, 2015). Mentoring in this way becomes an active relationship built on negotiation and trust. It is a relationship built on constructive criticism, support and hence allows for professional development. Mentoring is thus a powerful tool for student teacher professional development.

Solis (2009) depicts the professional learning of teachers as an on-going process of knowledge building and skills development in effective teaching practice. In the context of a diverse society, it is the process through which teachers in high minority schools master both content and diverse student pedagogy. With the support that they provide to student teachers, lecturers and mentor teachers facilitate professional development. Student teachers develop their theoretical understandings and tools that will enable them to take a self-regulated, inquiry approach to their everyday practice.

2. Method

In this study both qualitative and qualitative research methods are used to explore the views of mathematics student teachers on the role of teaching practicum on the professional development of Mathematics student teachers. Firstly, semi-structured group interviews of 10 students per group were conducted. The main question directed to the groups was:

What are your views on the role of teaching practice on your professional development?

Secondly, the aspects of the major theme (*Teacher knowledge and skills*) that emerged from the interviews were further investigated. To assess the influence that teaching practice has on the knowledge and skills of student teachers, participants were asked to each indicate the extent to which knowledge and skills had been enhanced in each of the following areas:

- Curriculum
- Instructional methods
- Approaches to assessment
- Use of technology in instruction
- Strategies for teaching diverse learner populations
- Deepening knowledge of mathematics

A questionnaire consisting of a five point scale ranging from 1 (not at all) to 5 (to a great extent) was used to report their responses.

3. Results

The results of the interview with participants indicated that knowledge and skills in most of the areas were enhanced by the teaching practicum. With respect to knowledge and skills in curriculum student teachers indicated that the mentor teachers had a positive influence. Some of the typical comments were, for example:

The mentor teacher helped us with the syllabus and the CAPS document.

The document referred to above is the Curriculum and Assessment Policy Statement which outlines topics to be covered for each level and the degree of complexity appropriate for the level.

The instructional methods that the student teachers learnt at university were put to practice under the watchful eye of the mentor teacher. Some of their responses were:

> When making lesson plans we sat together as trainees, discussed our
> lesson plans with the mentor teacher who was always willing to guide and
> help.

The students' content knowledge of mathematics was e evidently nhanced as it is reflected in some of their comment such as:

> Some of the concepts that were not part of the syllabus when we were at
> high school, we learnt while we were preparing for class. We understood
> some that we knew much better.

The student teachers responses according to the categories are presented in table 1 and figure 1.

Table 1. Frequency table showing the responses of student teachers on different aspects of knowledge and skills.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N=44
curriculum	2	6	8	8	20	
Approaches to assessment	5	4	12	11	12	
Instructional methods	3	3	12	11	15	
Use of technology in instruction	3	15	12	10	4	
Strategies for teaching diverse learner populations	6	6	9	5	18	
Deepening knowledge of mathematics	3	8	7	7	19	

Figure 1. Bar chart showing the responses of student teachers on different aspects of knowledge and skills.
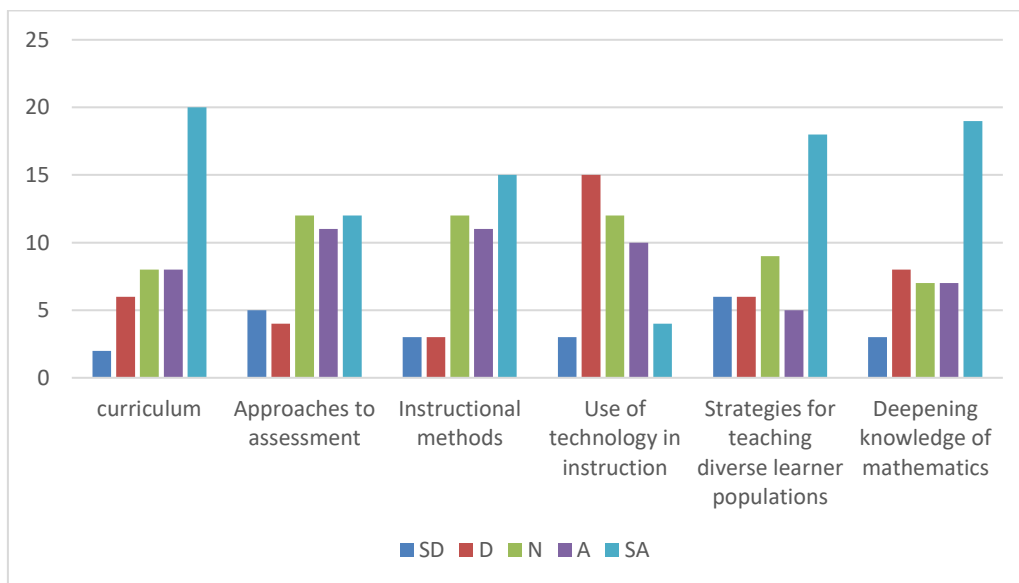
The results above indicate that student teachers' knowledge and skills were mostly enhanced in the categories of curriculum, strategies for teaching diverse learner populations and deepening knowledge of mathematics. The results also show a significant number of student teachers who disagreed that the teaching practicum enhanced their use of technology in instruction.

4. Conclusion

Through qualitative analysis of student teacher responses to questions in the questionnaire, their oral responses, and researcher's observations and field notes, it was discovered that specific components of teaching practicum made it a valued and critical experience for teacher professional development.

References

Farrell, T. (2008). "Here's the book, go teach the class" ELT practicum support. *RELC,* 39(2), 226-241.

Fulorng, V.J., Hist,P.U., & Pocklington, K. (1988). Initial teacher training and the role of the school. Philadelphia: Open University Press.

Darling-Hammond, L. (2006). Constructing 21st century teacher education. *Journal of Teacher Education*, 57: 1-15.

Foulds, S. (2002). *Teacher Development Challenges in the Context of Curriculum Reform*. SAPA. KZN

Schoeman, S, & Mabunda, P.L. (2012). Teaching practice and the personal and socio-professional development of prospective teachers. *South African Journal of Education*, 32(3): 240.

Ismail, N., Halse C., & Buchanan, J. (2000). Teaching practice in the Republic of the Maldives: Issues and challenges. *Pacific Asian Education*, 12(2): 40-56.

Marais, P. & Meier, C. (2004). Hear our voices: Student teachers' experiences during practical teaching. Africa Education Review, 1(2): 220-233.

Akbar, R.A. (2002). A study of Practice Teaching of Prospective Secondary School Teachers and development of a practice teaching model. Arid Agricultural University, Rawalpindi (PhD Thesis).

Villegas-Reimers, E. (2003). *Teacher professional development: an international review of the literature*. Paris: International Institute for Educational Planning.

Timperley, H. (2008). Teacher Professional Learning and Development. Educational Practices Series-18. *UNESCO International Bureau of Education*.

Gorgoretti, B., & Pilli, O. (2012). Pre-service teachers' views on the effectiveness of teaching practice course. *Procedia-Social and Behavioral Sciences*, *47*, 812-817.

Okeke, Abongdia,adu, van Wyk & Wolhuter.(2016). Learn to Teach: A handbook for teaching practice. Cape Town. Oxford University Press Southern Africa (Pty) Limited.

THE MATHEMATICAL SKILLS AND TIME AVAILABLE IN STANDARDIZED TESTS

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Abstract

The research project sets out to investigate the influence of the "time available" variable in the performance of INVALSI math tests in Italian students of secondary school. The INVALSI tests are standardized tests, based on articulated and rigorous procedures, for Italian school students. Evaluation of students' performance through INVALSI tests is mandatory by law (Article 51 paragraph 2 of the Decree-Law of 9 February 2012, No. 5 converted into law No. 35). The tests are elaborated by the National Institute for the Evaluation of the Education and Training System (INVALSI), a public law research body of the Ministry of Education, University and Research (Miur). The purpose of the tests is to draw a statistical reference framework on the level of learning in Italy. With the INVALSI tests it is possible to monitor the national education system and compare it with other European institutions. The INVALSI Test carried out at the conclusion of the Third-Degree State Examination of lower secondary school was an instrument for the certification of the students' learning (Fondazione Giovanni Agnelli 2014, p. 68). A study of 2011 (Chamberlain, Daly, Spalding), aimed at exploring the causes that trigger the examination anxiety, highlighted the importance of time available to complete the test among the causes. The time allotted to carry out a test or, in any case, the perception that students have of it can therefore be an element to be taken into consideration because it could alter the measurement of learning. Specifically, the survey aimed to perform a statistical analysis of the performance results of a sample of 137 students when the time variable varies. In particular, we wanted to establish if the time variable influences a different expression of skills. In first analysis it would seem that the time factor does not have direct consequences on students' performances, but Rasch analysis has shown that the time difference granted to students influences the emergence of students' skills in relation to the different difficulty level of each item of the math test. Finally, the survey describes the influence of the variable "luck" in the results of standardized evaluations.

Keywords: INVALSI, time, mathematics, secondary school, performance.

1. Introduction

The INVALSI tests are standardized tests for Italian middle school students, based on articulated and rigorous procedures. This tests are mandatory by law (Article 51 paragraph 2 of the Decree-Law of 9 February 2012, No. 5 c converted into law No. 35), this means that schools in Italy, in specific classroom must perform them. The tests are elaborated by the National Institute for the Evaluation of the Education and Training System (INVALSI), a public law research body, of the Ministry of Education, University and Research (Miur). The purpose of the tests is to draw a statistical reference framework on the level of learning in Italy. With the INVALSI tests it is possible to monitor the national education system and compare it with other National and European institutions.

The INVALSI Test carried out at the conclusion of the Third-Degree State Examination was an instrument for the certification of the learnings of the students (Fondazione Giovanni Agnelli, 2014, p. 68).

Although the Italian INVALSI Tests have a census and non-sampling purpose, they have the same evaluation approach, based on standardized structured tests, and the same statistical evaluation model of the OECD Pisa (Program for International Student Assessment) tests. This model is based on the matrix of Rach (Ray Adams, Comments on Kreiner 2011) that has been significantly criticized in Italy and abroad (A. Angelucci, 2015). The substantial difference between the two tests is that the Pisa OECD tests are aimed at the assessment of skills in context while the INVALSI Tests remaining anchored to the

school program, in both cases are time trials, although the OCSE Pisa tests give two hours of time available.

A study of 2011 (Chamberlain, Daly, Spalding), aimed at exploring the causes that trigger the examination anxiety, highlighted the importance of time available to complete the test among the causes. The time allotted to carry out a test or, in any case, the perception that students have of it can therefore be an element to be taken into consideration because it could alter the measurement of learning. Moving from these elements, the survey aimed to perform a statistical analysis of the performance results of a sample of 137 students when the time variable varies. In particular, we wanted to establish if the time variable influences a different expression of skills.

2. Research design

Pupils from third-year secondary schools were involved in the research. The proposal to participate in the project was sent to 7 local schools (Lecce and the province) of which 3 of them were available to participate in the project. Among these three schools, 8 classrooms were selected. The identification criteria suggested to the teachers for the classroom selection were: heterogeneous classes for performances thus avoiding excellent or particularly weak classes; heterogeneity by gender; classes that had not already used the INVALSI tests selected for the search. Overall a total of 188 students participated in the investigation. During the analysis of the results, the sample has undergone a reduction. The final non-probabilistic sample included 137 students, specifically 72 females and 65 males. Students who did not take part in the whole investigation procedure and pupils with disabilities were excluded from the initial group. Each of the 8 classes, for a total of 137 students, has been divided into 2 sub-groups, also assorted so as to equally distribute the school performances of the students. Subgroup A and Subgroup B were thus constructed. As indicated below:

Table 1. Distribution of the students in the sub-groups.

	MALE	FEMALE	TOT
SUB-GROUP A	31	32	63
SUB-GROUP B	34	40	74
TOT	65	72	137

3. Instruments

For the evaluation of mathematical performances, 2[1] INVALSI Tests of previous years were selected. In particular, we chose to use the school year 2010/2011 (called α test) and the school year 2011/2012 (called test β). The relative correction and scoring grids have also been used.

4. The Survey on the field

In the month of May 2017, two administrations of INVALSI Tests (Test α and Test β) were proposed in 2 separate subgroups (see Table 2), in 2 different days of the same week, in order to avoid a significant increase in the mathematical skills of the students between the 2 administrations. Each group, therefore, carried out both tests having different time frames available. In particular:

Table 2. Organization of the administration.

	1°ADMINISTRATION TIME: 120 minutes	2° ADMINISTRATION Time: 75 minutes
SUB-GROUP A	Test α	Test β
SUB-GROUP B	Test β	Test α

The administration took place inside the classrooms of the boys, in the presence of a teacher of the class (not necessarily that of mathematics) and at least one researcher. The boys' desks were separated and placed by file; the pupils, as far as possible, were seated so as not to have close companions who were doing the same test (in fact in the classroom there were guys who were taking the α test and guys who were doing the β test).

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[1]We chose to select two tests to be able to keep the "Test" factor under control, i.e. we wanted to check that the possible effects of the time available in the answers to the questions were not related to a specific test but could be generalized to anyone.

5. Analysis of the results

The first type of analysis carried out took into consideration the average scores obtained by the boys at both tests. Table 3 shows the test averages.

Table 3. Avarage of the scores of the two tests in the 2 administrations.

	1°ADMINISTRATION 120 minutes	2° ADMINISTRATION 75 minutes
Sub-group A (63 students)	Test α 36,84	Test β 25,9
Sub-group B (74 students)	Test β 26.76	Test α 34.64

At a first glance we immediately notice that in the Sub-group A the performance performed in more time has recorded higher scores significantly compared to the test performed in 75 minutes, this, therefore, would seem to confirm that a decrease in time available to perform the proof corresponds to a lower "possibility" to demonstrate one's own learning.

However, if we look at the averages of the two tests obtained from Subgroup B, we can see that the inverse condition occurs, i.e. that the performance has improved as time passes. What could have caused such contradictory results?

In order to understand what this different situation is due to, it is necessary to compare the two tests, in particular the mean scores of the α test in 120 with those of the β test carried out at the same time.

As indicated in Table 3, the mean α Test scores in the two administrations are generally higher than the mean β Test scores. A t-test detects significant differences between the two tests in both administrations. In the first administration (120 minutes), the mean scores are equal to 36.84 and 26.76 for α and β, respectively, with a difference significantly different from zero ($t = 6.968$; $p = 0.000$). Likewise, in the second administration (75 minutes) the difference between the mean scores of α and β denotes a significant difference between the two tests ($t = -6.062$; $p = 0.000$). Therefore, the α test and the β test are significantly different from each other and the α test is easier (since the results in both modes of administration are significantly higher) than β.

This first data, although interesting because it highlights the "luck" factor in the final evaluation of the students, does not allow to verify if the time of the test has influenced the performance results for the same subgroup of subjects. It is therefore necessary to compare the results to the same test carried out at different times by the two subgroups of students, relying on the fact that the starting samples were constructed by homogeneously distributing the pupils by level of learning, gender and experience of the tests. The test carried out in less time recorded lower average scores. Analyzing the means of the results, we can see that among them there is a difference, but a t-test showed little significance of this difference ($t = 1.35$; $p = 0.17$).

Taking into account the β Test carried out in 120 minutes by the subgroup B and by the subgroup A in 75 minutes we can see that the difference between the average scores of the two tests is even smaller. Also in this case a t-test showed the non-significance of this difference ($t = 0.67$; $p = 0.49$).

In summary, therefore, through the analysis of the means it emerged that the time allotted to carry out an INVALSI Test does not seem to affect the performance of the students.

However, a further analysis was carried out (both for the α test and for the β test) which took into account the difficulty coefficients of the individual test items. In particular, the objective of the survey was to check whether these coefficients were subject to variations as the time allocated for the performance of the test varies. It was therefore proceeded to calculate separately the difficulty parameters of the various items, both for the α test and for the β, depending on whether these were carried out in 120 or 75 minutes (see Table 4). These coefficients have been obtained through an analysis of the performances of the boys elaborated through the Rasch Model. The underlying median data indicate the parameters calculated with the Rasch and those estimated directly by the INVALSI, indicated in the technical reports of the Italian Ministry of Education relating to specific tests.

Table 4. Difficulty parameters for each item of the α and β Test and evaluated according to the Rasch Model.

TEST α	TEST β
● Average of difficulty coefficients of INVALSI items → -0.63 ● Average of difficulty coefficients of Test α items, test performed in 120 min → -0.59 ● Average of difficulty coefficients of Test α items, test performed in 75 min → -0.42	● Average of difficulty coefficients of INVALSI items → -0.07 ● Average of difficulty coefficients of Test β items, test performed in 120 min → 0.02 ● Average of difficulty coefficients of Test β items, test performed in 75 → 0.15

The Rasch analysis showed that the difference is due to the different difficulty level of each item. In relation to both tests, comparing the average of the difficulty rates of the items in 120 and 75 minutes, it should be noted that the difficulty increases when the testing time decreases. Furthermore, the distribution of the difference in values has zero mean ($p = 0.012$) which means that the variation is not attributable to the case, so the difference is significant (non-Gaussian distributions based on the Kolmogorov-Smirnov test; for paired samples) (see Table 5).

Table 5. Comparison between the means of the difficulty parameters of the tests carried out in 120 or 75 minutes with the Invalsi estimates.

TEST α: ● Alpha 120 vs INVALSI: ($p = 0.73$) null hypothesis not to be rejected. ● Alpha vs 75 INVALSI: ($p = 0.04$) null rejected hypothesis that is significant difference.
TEST β: ● Beta 120 vs INVALSI: ($p = 0.27$) null hypothesis not to be rejected ● Beta 75 vs. invalted comparison: ($p = 0.0002$) null rejected hypothesis that is significant difference.

From the comparison of the difficulty coefficients of the 120 and 75 minute tests with the INVALSI estimates (statistical significance analysis performed with sign test), it emerged that the estimates of internal difficulties of the INVALSI items overlap more than those estimated for the test carried out in 120, however, differ significantly from those carried out in 75 at least for the sample of pupils taken into consideration, this means that, conversely, with more time the children examined can achieve the expected results for a standard sample INVALSI in both tests.

6. Discussion

As already amply described in the previous paragraph, the analysis of the test scores averages revealed conflicting data within the 2 sample subgroups. In particular, in fact, if we considered exclusively what happened in the performance of Sub-Group A, we would try to confirm what was hypothesized when the research was started, ie that the time allowed to carry out an INVALSI test affects the outcome of the performance itself. But the results emerged in Subgroup B contrast with this because they manifest an opposite situation. What to say then about the relationship between time and performance? As has emerged through the analysis carried out with the t-test it is not possible to compare the performance of students of the same subgroup in the two tests (alfa and beta) because the two tests are significantly different.

The analysis carried out by comparing the results of the 2 subgroups on the basis of each test showed that the variations between the results of the youngsters exist (more time has produced higher scores / marks) but are not significant.

Going to consider the internal components of the tests, ie the index of difficulty of the items, it emerged that as time decreases, the difficulty coefficients of the tests increase, even significantly. Moreover, the difficulty coefficients of the items estimated by the INVALSI (which are calibrated on tests to be carried out in 75 minutes) are superimposable to those calculated through the Rasch Analysis starting from the results of the tests carried out in 120 minutes by the students examined in this research. . This may mean that the students of the classes under consideration in this study do not reach the standards established in 75 minutes (therefore they show lower performances compared to those of the sample classes), but they manage to do so having more time available. This would seem to confirm the starting hypothesis that the test time is a significant variable from the perspective of the extrinsication of one's own abilities in the mathematical field.

7. Conclusions

It is not easy today to establish the correlation between the time variable and the mathematical abilities, but it is clear that a relationship between them exists. It is not possible to deduce this only from the analysis of the scores or marks achieved by the students because the method of attribution of the same, for subsequent "boxing", reduces the evidence of this data. But the analysis of the difficulty coefficients of the tests shows the existence of an inverse correlation between the time allocated for the performance of the test and the difficulty of the same. This does not call into question the validity of the INVALSI Tests, which, it is clear, have a census scope, but raises some perplexities from the point of view of the evaluation of mathematical abilities.

In this regard it is necessary to make a further statement: the analysis carried out showed that the tests chosen for this research have an objective difference in relation to their difficulty coefficient. And this is even more evident if we notice that the same subgroup of youngsters shows extremely different performances in the two Tests: in Subgroup A the sufficient or more than sufficient performances (from 6 up) pass from 79% (Test α) to 37% (Test β) of the sample and for Subgroup B from 31% (Test β) to 73% (Test α).

This finding raises a question: starting from the assumption that these Tests are National Tests or have been examination tools respectively in the years 2011 and 2012 and that "the INVALSI Test carried out at the conclusion of the State Exam of the Secondary Secondary School also serves to certify the learnings of the students "[Cf. Agnelli Foundation; 2014, page 68], which of the values (scores / grades) achieved by the students can be considered the value of the learnings of the students? We recall, in fact, that the vote obtained by the students at the National Trial until 2017 has contributed to the final evaluation of the examination of the first cycle of education and today is equally significant as it is a prerequisite for admission to state examinations. Moreover, an analysis of the coefficients of difficulty of the National Tests carried out from 2010 to 2017 (these data are included in the Technical Reports published by the INVALSI annually) shows a considerable variability between the Tests, so a student with average skills can get extremely different results while working at most, in fact, in addition to his skills depending on the test he is called to perform, the time available and the luck factor play a considerable role. It is highlighted that time management is a critical element for the emergence of skills in those boys with average grades that make up the majority of students. As it is known from the 2017/2018 school year, following the D.M 741/2017, the Tests are granted more time, it goes from 75 to 90 minutes but will be tests to be performed on the computer. This novelty in the administration if apparently seems to have grasped the problem of the variable time available for the conduct of the tests and therefore respond to the need for more calm and reflection, the other will risk to nullify this data having to deal with the computer tool, with the connection of the school network in addition to the familiarity of the instrument itself in solving a mathematics task.

In conclusion, considering the relationship that the variable time has in the emergence of mathematical skills in relation to the difficulties of the tests, considering also that this element affects the boys which perform at an average level, furthermore considering that the elaboration of solution-problem processes can follow creative and complex processes, that requires the implementation of a specific competency. It is believed that freeing the INVALSI tests from such rigorous time margins, as well as helping to lower individual anxiety levels, can contribute to a more realistic expression of learning processes.

References

Angelucci A. (2015). *OCSE PISA e INVALSI: una prospettiva europea*. Roars. In https://www.roars.it/online/ocse-pisa-e-invalsi-una-prospettiva-europea/

Borkovec T.D., Ray W.J., Stoeber J., (1998). Worry: a cognitive phenomenon intimately linked to affective, physiological, and interpersonal behavioral processes. *Cognitive Therapy and Research*. vol 22, pp. 561-576.

Caponi B., Falco G., Focchiatti R., Cornoldi C., Lucangeli D. (2006). *Didattica meta cognitiva della matematica. Nuove prospettive e strumenti.* Erickson, Trento.

Chamberlain S., Daly A.S., Spalding V. (2011). Assessment and Qualifications Alliance, *Pastoral Care in Education*, vol 29, pp. 193-205.

Di Nuovo S., Magnano P. (2012). *Competenze trasversali e scelte formative. Strumenti per valutare meta cognizione, motivazione, interessi e abilità sociali nella continuità tra livelli scolastici,* Erickson, Trento.

Faust M.W., Ashcraft M.H., Fleck D.E. (1996). Mathematics anxiety effects in simple and complex addition. *Mathematical Cognition*. vol. 2, pp. 25-62

Fondazione Giovanni Agnelli (2014). *La valutazione della scuola. A che cosa serve e perché è necessaria all'Italia.* Editori Laterza, Bari.

Ray Adams, Comments on Kreiner (2011). Is the foundation under PISA solid? A critical look at the scaling model underlying international comparisons of student attainment, in https://www.oecd.org/pisa/47681954.pdf

HOW INFORMED ARE OUR EDUCATORS?
A SURVEY STUDY ON THE AWARENESS OF SCHOOL BULLYING AMONG PRIMARY THROUGH HIGH SCHOOL TEACHERS IN CHINA

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Abstract

School bullying is undoubtedly a worldwide problem; it can be observed among children and adolescents all across the globe. For the past few years, it has become serious in China as well and consequently received great attention. Even the Chinese government has recognized this and recently issued a document that specifically defined school bullying and suggested coping strategies. From an environmental perspective, teachers play a crucial part in the prevention and control of school bullying. By investigating eleven schools in Shaanxi province through interviews and questionnaires, this study focuses on the awareness as well as knowledge about school bullying among Chinese high school, middle school and primary school teachers. It was revealed that, for the majority of teachers, the concept of school bullying is still vague. Because they are generally incapable of recognizing common bullying behaviors, there is significant room for improvement. The teachers are most aware of physical bullying and least knowledgeable about cyber and verbal bullying. The levels to which they are informed varies according to location (i.e., urban versus rural), grades taught, and educational background. Therefore, policy publicity and teacher training should be strengthened to improve the accuracy of teachers' awareness of school bullying.

Keywords: School bullying, primary through high school teachers, awareness.

1. Introduction

Identifying bullying is the first step toward taking action to prevent it. The National Education Association (NEA) defines bullying as systematically and chronically inflicting physical hurt and/or psychological distress on another (2016). Bullying can be physical, verbal or social. It can be as direct as teasing, hitting, threatening, destructing property or forcing someone to do something against their will, or as indirect as in the use of rumors, exclusion, or manipulation. Bullying involves either a real or perceived power imbalance between the one who bullies and their target (2017).

Teachers play an important role in preventing and controlling school bullying. Their level of awareness directly affects the effect of the prevention and control of school bullying. In order to further control school bullying, the Chinese government has issued a document giving the specific definition of school bullying: School Bullying is a type of bullying that occurs among students. It can occur in school (including primary and secondary schools and secondary vocational schools) or outside of school. It happens when an individual or group of individuals deliberately or maliciously carries out bullying or insulting by means of limbs, language or network and their actions result in physical injury, loss of property, or mental damage to another individual or group (2017). However, can teachers really understand the specific concept of "school bullying"? Are they able to accurately judge what is bullying behavior in school? What kind of school bullying is more easily ignored by teachers? What is the reason behind it?

2. Methods

In order to conduct a survey on the definition of school bullying, we interviewed 30 people in depth, including 10 headmasters, 10 class teachers and 10 ordinary teachers through primary school, junior middle school, high school and secondary vocational school. A questionnaire survey was conducted on the awareness of school bullying behaviors. It was given to 11 primary and secondary school teachers in Shaanxi Province, including 3 primary schools, 5 junior middle schools and 3 high schools.

The questionnaire was based on the Chinese version of the "Victim & Bully Questionnaire," which was compiled by Norwegian psychologist Olweus, as well as the PISA 2015 questionnaire (2015). Within the latest release of the Chinese Ministry of Education on school bullying, a relevant category on "cyber bullying" has been added and an "Awareness scale of bullying behavior in primary through high schools" has been formulated. There are 22 topics in the test, including four general attacks tests, four physical bullying tests, four verbal bullying tests, four Emotional bullying tests, four cyber bullying tests, and two interference tests. By the end of February 14, 2018, after four rounds of recycling, 320 questionnaires were issued and 239 were taken back among which 224 are valid. The basic information of the respondents was shown in the following table:

Table 1. Basic information about the samples.

Items		Number	Percentage
Gender	Male	46	20.44%
	Female	179	79.56%
Location	Rural area	46	20.44%
	Urban area	179	79.56%
Position	Head teachers	69	30.67%
	Other teachers	156	69.33%
School of instruction	Primary school	71	31.56%
	Junior middle school	105	46.67%
	High school	49	21.78%
Academic qualification	Junior college	34	15.11%
	Bachelor	181	80.44%
	Master	10	4.44%
Length of teaching experience	Less than 5 years	40	17.78%
	6-15 years	51	22.67%
	16-20 years	58	25.78%
	More than 21 years	76	33.78%
Total		225	

3. Data analysis and results

3.1. Awareness of the concept of school bullying

The Chinese Ministry of Education has given the exact definition of school bullying. This study is to perceive the intuitive understanding of the concept of school bullying held by teachers and educational managers through interviews. In content processing, we used ROST News Analysis news software to extract and analyze key words from interview results. According to the total frequency analysis (Table 2), it can be seen that the frequency of "physical" and "verbal" appears most frequently. Most of the interviewees think that "physical bullying" and "verbal bullying" are the main forms of school bullying and that "older bullying younger" is the main feature of school bullying. According to adjective frequency feature extraction, the frequency of "weak" appears most frequently. In combination with relevant text, it is found that many interviewees believe that "power imbalance" is a criterion of school bullying; however, the Chinese official definition does not yet include this. At the same time, the presence of "serious" lasting effects of school bullying was considered by the teachers to be an important characteristic of school bullying.

According to the integration of the interview results, it is found that the educators have the following deviations in the concept of school bullying: 1. Some educators think that "fighting" and "school violence" are equivalent to school bullying. Among all of the verbs, using the verb frequency feature extraction we found that many interviewees equate "fighting" with "physical bullying" and also cannot clearly distinguish between "school violence" and "physical bullying" 2. Educators do not pay much attention to school bullying. Some even believe that some kinds of school bullying behavior (e.g., name-calling, threats) is simply recreational amusement and play among schoolmates 4. It is considered that school bullying only refers to bullying in schools. Some of the interviewees suggested that bullying or violence that occurs outside of school belongs to the jurisdiction of departments of public security and is not the responsibility of the school attended by bully and victim.

Table 2. Keywords extraction analysis.

Word frequency extraction table		Verb frequency extraction table		Adjective frequency extraction table	
Vocabulary	Frequency	Vocabulary	Frequency	Vocabulary	Frequency
Physical	19	Fight	14	Weak	7
Verbal	15	Abuse	6	Grave	4
Older bullying younger	14	Cheat money	4	Bad	4
Fight	13	Strike	2	Isolated	2
Strong bullying the weak	8	Threaten	2	Broad	2

3.2. Logistic model analysis

According to the descriptive statistics of the tests, the teachers surveyed showed the highest level of awareness for physical bullying, with an accuracy rate of nearly 80%. The levels of awareness of cyber bullying and verbal bullying are relatively low, both no more than 70%. The accuracy of knowledge of verbal bullying is the lowest. Then we used a logistic model to conduct in-depth analysis, the variable assignments of which are shown in Table 4. The P value of the model is 0.82, which is far greater than the given level of 0.05. This shows that the actual distribution of the sample data is not significantly different from the predicted distribution, and the model is suitable in goodness of fit. The iterative operation shows that the prediction accuracy of the final model is 73.3% and the two lines are more than 0.5 of the critical value, indicating that the model represents most of the observed phenomena.

Table 3. Variable assignment.

Variable type	Variable name	Variable assignment
Independent variable	Gender	Male=0,　Female=1
Independent variable	Location	Rural=0,　Urban=1
Independent variable	School of instruction	Primary school=0,　Junior middle school=1,　High school=2
Independent variable	Academic qualification	Junior college =0,　Bachelor=1 Master=2
Independent variable	Head teachers	No=0,　Yes=1
Independent variable	Length of teaching experience	Less than 5 years=0,　6-15 years=1 16-20 years=2,　More than 21 years=3
Dependent variable	Awareness level	Not awareness=0,　General awareness =1

Table 4. Hosmer-Lemeshow test.

Hosmer-Lemeshow			
Chi-square	df		Sig
3.644	7		0.820
Classification			
Observation value	predicted value		
	Awareness level		Correct percentage
	Not awareness	General awareness	
Awareness level	No	49	36	57.6%
	Yes	24	116	82.9%
Percentage	73.3%		

Table 5. Variable in the Equation.

Dependent variable : Awareness level of school bullying					
Items	B	S.E.	Wald	df	Sig
Gender	-0.068	0.401	0.029	1	0.865
Location	1.446	0.391	13.641	1	0.000
School of instruction	0.622	0.234	7.029	1	0.008
Academic qualification	2.249	0.446	25.447	1	0.000
Headmaster or not	-0.386	0.364	1.122	1	0.290
Length of teaching experience	0.143	0.145	0.973	1	0.324
Constant	-3.676	1.077	11.657	1	0.001

From the results of the regression analysis of Table 5, we can see that the three variables of "location," "school of instruction" and "academic qualification" have all passed the significant test of 0.05 and have a more significant impact on "awareness level of school bullying". The most significant one is "academic qualification", which indicates that teachers with higher education background have a higher degree of awareness for all kinds of school bullying behavior. The "location" factor has a significant correlation with the degree of school bullying awareness, and the teachers in urban schools are more likely to distinguish school bullying behaviors than the rural teachers. In addition, the older the grades in the "school of instruction" are, the higher the teachers' awareness of school bullying is. The three items of "gender," "headmaster" and "length of teaching experience" did not pass the significant test, showing that the three factors had no obvious influence on the teachers' awareness of school bullying.

4. Conclusion and future research

4.1. Conclusion

Most teachers cannot clearly define the concept of "school bullying". They are also not capable of recognizing the various types (i.e., physical, verbal, emotional, cyber) of school bullying and underestimate the harmful consequences that it may bring. Most teachers believe that "physical bullying" and "verbal bullying" are the main components of school bullying, and they lack attention to the less visible types of bullying such as cyber bullying and emotional bullying. Teachers at higher school levels have greater amounts of awareness about school bullying. Urban primary and secondary school teachers who themselves had more education have higher awareness levels than teachers from rural areas.

4.2. Future research

Clearly defining what school bullying is and its typical behaviors is an important prerequisite for ensuring teachers' correct awareness. Researchers have also suggested that "power imbalance" (2015, 2014) is an important subject to pay attention to in the future in order to gain further insight into school bullying. Because teachers, especially in rural schools, do not understand the bullying prevention documents issued by the government well, their training should be supported and fortified. In order to ensure teachers' dominant role in the prevention and control of bullying, we must also standardize procedures with which teachers deal with bullying. This may eventually reduce the phenomenon of teachers rejecting responsibility for the prevention of bullying because of limitations in their awareness.

References

Bradshaw, C. P. (2015). Translating research to practice in bullying prevention. American Psychologist, (70): 322–332.

Byongook Moon, Leanne Fiftal Alarid.(2014).School Bullying, Low Self-Control, and Opportunity.Journal of Interpersonal Violence,(6):14-16.

Ma, Qian, Xu, Jie, and, Tao, Xia. (2016).Three—Dimensional System and its Components of Regulating Bully Behavior in US School[J]. Education Research Monthly, (10): 49-68.

No place for bullying: how schools create a positive culture and prevent and tackle bullying (2017) [EB/OL.]https://www.gov.uk/government/uploads/system/uploads/attachment-data/file/413234/No-place-for-bullying.pdf.

School Bullying Integrated Management Enforcement Act. Chinese Ministry of Education (2017) [EB/OL]. http://www.moe.gov.cn/srcsite/A11/moe_1789/201712/t20171226_322701.html.

Zhang,Wen Xin.Wu ,Jian Fen, Kevin Jones. (2015).Revision of the Olweus child bullying questionnaire—In Chinese version [J].Psychological development and education, (2): 7-12.

INVESTIGATING FIRST-YEAR PHYSICS STUDENTS' CONCEPTUAL UNDERSTANDING OF VECTORS

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Abstract

The paper reports the findings of the investigation conducted on first-year B.Ed. (FET) Natural Science physics students at University of Technology (UoT), in the Free State Province, South Africa. The aim was to assess their conceptual understanding and knowledge of vectors and to identify possible misconceptions. Physics is compulsory to all first-year B.Ed. (FET) Natural Science students at this UoT. This was an exploratory study conducted among first year physics undergraduate students, in which vectors was identified as a problem area. The instrument used to collect data consisted of questionnaire made of multiple choice questions on vectors. A pilot test of this questionnaire was administered to about 30 students in 2014. For validity and reliability of the questionnaire, fellow academics were employed. A questionnaire was thereafter administered to a willing 187 first year physics students in 2014 and 2015 in the pilot study. The responses of the participants were analysed for patterns and trends statistically, to conclude this study. The performance by the students in the questionnaire was low. The results therefore indicated that the students do have problems with the conceptual understanding and knowledge of vectors in physics. Their responses were analyzed by coding and categorizing. Results indicated that the students do have problems with conceptual understanding and knowledge of vectors in physics. These problems are influenced partly by the common-sense knowledge that the students possess about science concepts and which seems to clash with the scientific knowledge presented in their physics classes. The conclusion deduced from this was that first-year undergraduate physics lecturer need to identify and rectify misconceptions by their students and therefore use different science teaching strategies to overcome this.

Keywords: Conceptual understanding, scientific knowledge, vectors, teaching strategies, physics, misconceptions, patterns and trends.

1. Introduction

Vectors has been found to be at the heart of physics education (O'Brien and Sirokman, 2014) and undergraduate physics learning and teaching. O'Brien and Sirokman, 2014 further refer to concrete and comprehensive knowledge and understanding of vectors as laying the foundation and basis towards advancing any studies in physics and engineering. Aguirre, 1988; Aguirre & Rankin, 1989; Zavala & Barniol, 2013 argued that undergraduate physics students' lack of conceptual understanding of vectors pose a serious threat and obstacle as most physics concepts involve and are based on vectors knowledge.

This is the reason why introductory physics courses at the university undergraduate level includes physical concepts and vectors. It is therefore mandatory that students on introductory course fully understand these concepts to have a clear conceptual knowledge of vectors. This study is a follow-up on recent studies investigating the conceptual understanding of vectors by undergraduate physics students.

A vector in physics and used in science, by definition, is a description of quantity in terms of both a direction and a magnitude. They are mainly represented diagrammatically by means of pointed arrows to indicate a direction and a line or the length which represents the magnitude.

Practical use of vectors in daily lives includes sports. In football, players must "account for their own motion when throwing a pass" where "both the player's movement and the path of the ball can be represented by arrows known as vectors" (The Sciences - Scientific American (Eds), 2010). Another practical application is that of explaining and showing physical objects or phenomena and their properties such wind blowing with a certain velocity in a certain direction, a billiard ball rolling across a table, etc., (The Sciences - Scientific American (Eds), 2010).

Students lack mathematics skills and knowledge, and vectors is one of them, and this causes them difficulty in their learning and understanding of physics according to some studies (Flores-García, Alfaro-Avena, & Dena-Ornelas, 2008). They still have misconceptions in vectors even though they studied or learned them before (Knight, 1995; Nguyen & Meltzer, 2003; Flores, Kanim, & Kautz, 2004; Shaffer & McDermott, 2005; Heckler & Scaife, 2015). It has been observed that even precollege teachers and some graduate students are battling and having difficulty with vectors understanding (Wutchana, Bunrangsri and Emarat, 2015).

Previous research (Knight, 1995), have indicated that about one-third of undergraduate physics possess enough conceptual knowledge of vectors to do be able to do Newtonian mechanics. The effective teaching of vectors by undergraduate lecturers will therefore poses a great motivating factor for these students since it is their first experience and introduction in their physics study. Lecturers should put into cognizance to determine the level or amount of prior learning and knowledge their students possess to effectively teach vectors.

Heckler and Scaife, 2015 have stated that from the few researches that investigated the conceptual understanding of vector addition and subtraction in undergraduate physics, the main common findings were students' difficulties with arrow representations of addition and subtraction of vectors. Further research study by Wutchana, Bunrangsri and Emarat, 2015 also investigated that high school learners have a deficiency in the qualitative understanding of dimensional addition and subtraction of vectors, which is a basis of comprehending the basics of vectors in physics.

The problems encountered in presenting physics concepts like vectors is that students frequently have preconceptions about the world around them. As a result, it is difficult for them to make sense and comprehend such concepts. They find the concepts to be to abstract to relate them to their real-world situation and or surrounding environment. These preconceptions have been given different names, for example, alternative conceptions, commonsense knowledge and even misconceptions. Whatever name is used such conceptions affect the understanding of physics concepts.

2. Aim of the study

The aim was to assess their conceptual understanding and knowledge of vectors and to identify possible misconceptions.

3. Objectives

- To assess the conceptual understanding of vectors by first-year B.Ed. ((FET) physics students
- To assess the knowledge of vectors by first-year B.Ed. ((FET) physics students
- To identify possible misconceptions of vectors by first-year B.Ed. ((FET) physics students

4. Research questions

- What criteria was used to assess the conceptual understanding of vectors by first-year B.Ed. ((FET) physics students?
- What knowledge do first-year B.Ed. ((FET) physics students have on vectors?
- What possible misconceptions on vectors do first-year B.Ed. ((FET) physics students have?

5. Significance of the study

The study will make physics high school teachers and lecturers to take cognizance of learners' deficiency in the conceptual understanding and knowledge of vectors. This will also help learners grasp the fundamental basics of vectors in physics and be able to apply them. Thus, leading to improved performance and matric results in physics.

6. Research methodology

A mixed- method approach was used in this study. The instruments used were questionnaires and follow up interviews with a focus group. The questionnaire was verified for validity and reliability by fellow colleagues. The questionnaire was administered to a convenient sample of 187 first-year B.Ed. (FET) Natural Science, physics students from a population of 250 at University of Technology (UoT), in Bloemfontein, Free State Province, South Africa. A follow-up interviews was conducted with 12 of the respondents.

7. Results and data analysis

With this background in mind an exploratory study was undertaken in 2014 and 2015 with the first year B.Ed. (FET) Natural Sciences students to identify the problem areas that they might have in vectors. First, the researcher established their general pass level (symbols) and the levels of difficulty of the topics in physics before determining their understanding of vectors. The students were thus requested to indicate the symbols they obtained in physical in matric. Table 1 shows a breakdown of the symbols the students obtained in physical science in matric.

Table 1. Physical Science Matric Symbols (n = 187).

Symbol	Physical science	
	No. of students	%
7	6	80 and above
6	15	70 – 79
5	27	60 – 69
4	72	50 – 59
3	44	40 – 49
Blank	23	-
Total	187	-

Note that students are admitted into B.Ed. studies if they obtained a symbol 4 and above, i.e., 50% and above in physical science. Those who got a symbol of 3 (between 40 and 49%) are given selection test, which if they pass it, they able to be admitted into programme.

From the table 1, 44 students (24%) were admitted after writing and passing the selection test while twenty-three (23) did not specify the symbol in their matric result. It can be seen that the majority of the students (72) had passed the subject with a symbol 4 while 48 passed above symbol 4 (60% and above). This says a lot about their level of understanding of physical science, particularly in physics.

Participants were also asked which topics they find difficult form and to rank them according to the level of difficulty accord Linkert scale

Table 2 shows the problem areas that the students identified in the physics section of the senior certificate physical science results.

Table 2. Topics in physics (n = 187).

Topic	Frequency	%
Electricity	52	27.8
Mechanics	104	55.6
• Vectors and scalars	65	34.8
• Equations of motion	23	12.3
• Momentum	16	8.6
Others	31	16.6

55.6 % of the students identified mechanics as a problem area where construction of vector diagrams and resolution of vectors was a main problem with a percentage of 34.8. Electricity ranked the second as a problem area. **Conceptual understanding and Knowledge of Vectors.**

Participants were asked on the aspects or constructs of a vector in physics, viz., definitions, comparisons, reading, representation and components. Correct responses were recorded in table 3 below:

Table 3. Responses of constructs/aspects of vectors.

Aspects	Frequency	Percentage
Definition		
- Vector	175	93.58
- scalar	160	85.56
Comparison		
- vector	97	51.87
- scalar	120	64.17
Reading		
- magnitude	133	71.12
- direction	83	44.39
Representation		
- magnitude	88	47.06
- -direction	76	40.64
Components		
-vertical	96	51.34
horizontal	84	44.92

According to the table 3 above, it is evident that the majority of participants (93.58%) did not experience difficulties with terminology of vectors. However, they struggle with reading (44.39%) and representation (40.64%) of direction. With regard to splitting a vector into components, participants' performance was average. When it comes to comparison, identification by inspection was above average meaning that most of them could differentiate a vector from a scalar.

8. Discussion and conclusion

The study indicated that participants did have difficulties with visual representations in terms of arrows but not actual physics concept. This suggests that with constant practice, arrow representation of direction may lead to enhanced performance. Using cooperative learning as an instructional tool, which sometimes is underutilized, could help in the understanding and application of vectors in physics, suggesting that more should be made available towards the effective teaching and learning of vectors.

References

Aguirre, J.M. (1988). Student Preconceptions about Vector Kinematics. The Physics Teacher, 26 (4), 212-216.

Aguirre, J.M., & Rankin, G. (1989). College students' conceptions about vector kinematics. Physics Education, 24 (5), 290-294.

Flores, S., Kanim, S.E., & Kautz, C.H. (2004). Student use of vectors in introductory mechanics. American Journal of Physics, 72 (4), 460-468.

Heckler, A.F., and Scaife, T.M., 2015. Adding and subtracting vectors: The problem with the arrow representation. Physical Review Special Topics - Physics Education Research 11, pp 010101-17. American Physical Society

Knight, R. D. (1995). The Vector Knowledge of Beginning Physics Students. The Physics Teacher, 33 (2), 74-77.

Knight, Randall D. (2004). Five Easy Lessons: Strategies for Successful Physics Teaching, Addison Wesley, San Francisco, CA.

Nguyen, N. & Meltzer, D.E. (2003). Initial understanding of vector concepts among students in introductory physics course. American Journal of Physics, 71 (6), 630-638.

O'Brien, J., and Sirokman, G., 2014. Teaching Vectors to Engineering Students Through an Interactive Vector-Based Games. American Society for Engineering Education Annual Conference Proceedings & Exposition Proceedings, Indianapolis, India, June 15 -18, 2014

Ozimek, D.J., 2003. MATH 791, Effectively Teaching Vectors in an Introductory Physics Course. December 15 , 2003. https://www.math.ksu.edu/math791/finalpaper/darrylterm.pdf http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.532.8859 Accessed 25 August 2017.

Shaffer, P.S. & McDermott, L.C. (2005). A research-based approach to improving student understanding of the vector nature of kinematical concepts. American Journal of Physics, 73 (10), 921-931.

Scientific American: The Sciences (Eds.) - What Are Vectors, and How Are They Used? https://www.scientificamerican.com/article/football-vectors/\ Accessed: 28 November 2017

Wutchana, U., Bunrangsri, K., and Emarat, N., (2015). Teaching Basic Vector Concepts: A Worksheet for the Recovery of Students' Vector Understanding. Eurasian Journal of Physics & Chemistry Education, 7(1): 18-28.

Zavala, G. & Barniol, P. (2013). Students' understanding of dot product as a projection in no-context, work and electric flux problems. AIP Conference Proceedings, 1513, 438-441.

EFFECTIVE PROVISION OF FEEDBACK ON ASSIGNMENTS FROM A LARGE CLASS

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Abstract

Program Design, Data Structures and Algorithms is a basic yet popular module in the higher education of computer science discipline. The module encompasses rather diversified topics such as program design, abstract data types, stacks, queues, and priority queues. The yearly average of students enrolled this module in our university is about 160 and their achievements are normally assessed through two equally weighted attainments: a course work assignment and a 2 hour exam. The assignment consists of studies about selection and the design of proper data structures such as queues, and priority queues for the compression of a given text file using Huffman encoding scheme. The students are also required to write a report on how the encoding scheme is implemented. The assignment is usually released in early November and the students are required to hand in their reports by early December.

Timely provision of feedback has been found crucially important to help improve student's learning experience and ultimately to enhance their overall learning performances. Assistances to help early identification of issues, such as their abilities for grasping and applying the relevant and appropriate knowledge for solving the given problem; the provision of guidance for revising relevant contents; and encouragement for further developments through early planning of the present study as well as future modules, have been found to keep the students on the right track rather effectively. Subsequently, the positive progress of the study also encourages the students to learn further. Equally important to the success of the module is the appropriate marking scheme which requires careful calibration of grades and to apply the marking criteria consistently across a large class.

In this paper, we report a study on the effectiveness and efficiency of how the feedback is given to the students through a modern marking software. Four different ways for providing feedbacks have been deployed: (i) detailed written feedback on each assignment, (ii) general written feedback, (iii) detailed written feedback on request, and (iv) face-to-face detailed oral and interactive feedback. The end results have been evaluated through the following four methods: module questionnaire, module moderation report, feedback from external examiner and also through departmental examination board. A comparative study of the module over the last three years shows that a combination of the latter three is more effective and more appreciated from the student's perspective. The findings may be potentially suitable for teaching such large classes as Professional Issues in the Computing Industry.

Keywords: Computer science module, large class, programming, module assessment, effective feedback provision.

1. Introduction

Program Design, Data Structures and Algorithms is an important computer science module in higher education study. The module aims at introducing basic knowledge and concepts for solving real world problems. Core topics of the module include program design, abstract data types, stacks, queues and priority queues. Other techniques such as course revision and assignment preparation have been part of the module too. While the topics are rich in the context of knowledge introduction, it is also a challenge for students to learn and to grasp in short time. To facilitate the learning, an assignment together with timely feedback has been designed to testify the efficiency of students' learning and progression. The assignment is normally given in early November and feedbacks are provided from early January of the following year, to ensure students to absorb the provided feedbacks well before the exam which takes place in late January of the following year.

Timely feedback has been found crucially important for enhancing students' learning efficiency. The feedback serves a variety of purposes including evaluation of students' achievements, enhancing students' competences and understanding and also elevation of student's motivation and confidence (Hyland, 2000). This helps students to develop their abilities to monitor, evaluate and regulate their own learning progress (Nicol, 2010). There are two categories of feedback: formative and summative feedback (Carless, 2006). They have diffident functions and purposes. The former aims to help student to learn, while the latter aims to grade or measure. Such classification may not always be useful, there is a need to rehabilitate the summative feedback so that its negative impact would not detract students from the positive impact of the formative feedback.

Timely provision of feedbacks is challenging in the sense of relevance, individualization, consistency, and construction, particularly for teaching large classes. Unlike most feedback systems, such as the online one, which was developed to engage students in the feedback process interactively (Hatziapostolou and Paraskakis, 2010), this paper investigates how the feedback can be effectively provided to enhance the studying of a computer science module through a given assignment. While the tutors have multiple duties and workload, the students also demand differently towards the details of the feedback that they need (Nicol, 2010). Thus, the feedback has been provided at different levels: (i) detailed written feedback on each assignment, (ii) general written feedback, (iii) detailed written feedback on request, and (iv) face-to-face detailed oral and interactive feedback. While the former three are generally driven by the tutor, the last one is dominantly originated from the students. Such multiple approach is designed to maintain a balance between what the tutors can offer and the requirements that are needed from the students. This paper investigates this hypothesis through a comparative study of past three years' assessments of the module through module moderation report, student questionnaire and the feedbacks from the external examiner and departmental examination board.

2. Assignment

The assignment was given in early November 2016 and they were required to hand in by early December 2016. The feedback was sent to students in early January 2017. The assignment required students to implement the classical Huffman encoding scheme to encode 7 given text files: morse.txt, random10000.txt, random20000.txt, randomBiased30000.txt, Shakespeare.txt, test.txt, test-long.txt, and test-short.txt. The sizes of these files vary from as small as 54bytes of test-short.txt to as large as 39078508bytes of shakespeare.txt. To this end, the proper data structures such as Queues, Priority Queues, Maps, Heaps, and Stacks must be selected and applied for effective and efficient implementation. It is also required to print out (in this order) uncompressed file size, compressed file size and the compression ratio (uncompressed file size/compressed file size) to the console followed by statistical textual output which describes the built tree (in the order of height, number of nodes, and average depth). The uncompressed file size should be determined based on the brute force fixed length encoding scheme and is the length of the corresponding encoding. The compressed file size is the length of the Huffman encoding. Such quantitative information plays a crucial role in revealing whether the technique was correctly implemented and various data structures were correctly applied. It is also required to compare the brute force fixed length with the Huffman variable length encoding schemes.

3. Marking

The assignment was assessed from the following three aspects: (i) Program design and implementation (50%). This part required students to implement some form of file-handling to allow reading-in the file for processing and to perform frequency counting of characters, to build the Huffman tree, to implement the Huffman encoding scheme and to generate an optimal binary string representation for each symbol. (ii) Program evaluation (30%): this part required students to use various given data files to validate the implemented Huffman encoding scheme and to print out some statistical parameters such as the size of the fixed length encoding, the size of the compressed file, the compression ratio, the height of the tree, the number of nodes and the average height of the tree, to comment on the suitability of the selected data structures and their time and space complexities, and to discuss advantages and disadvantages of the brute force fixed length and Huffman variable length encoding schemes. (iii) Report (20%): this part required students to document the work done about the design, implementation and validation of the technique and finally the acknowledgment of the third party materials with no more than 2000 words. The marking grid is given in Table 1.

A marking software marking.jar (Snooker, 2013) had been adopted to speed up the marking process. This software has been developed by Dr. Snooker, Department of Computer Science, Aberystwyth University and it has a number of functions: (i) Module: it provides an interface to allow the loading of a list of enrolled students who are engaged in the module. (ii) Assessment: it allows different marking criteria to set up such as contributions of the task in percentage of grades or in actual marks,

relative marks (normally 10) and the corresponding grades; and whether to show optional feedbacks for this particular grade. (iii) Results: to select a particular marking criterion category that the work deserves for each student. If necessary, comments applicable to other students for a particular criterion or general comments about particular student will also be generated. (iv) Feedback: this allows to write a general feedback for the whole module so to let the students have better ideas of which area they may need to pay for more attention so to improve the learning and the revision efficiencies of the module. Through this function, all feedback can be either sent to the students through emails, or alternatively a selection of students. A summary of the feedback will also be sent to the tutor. (v) Spreadsheet: it generates statistics of the results automatically for the examination board meetings. Some students may not submit their assignments and in this case the "non-submission" button of the Results page should be checked. Finally (vi) Help: some instructions have been provided for explaining the operation of the software.

Table 1. Marking grid .

Components	70-100%	50-60%	50-60%	40-50%	0-40%
Program design and implementation (50%)	Well documented, explained and presented in the report. Easy to read source code with intuitive structure, naming and coding conventions	Relatively detailed documentation, with some details missing. Good overall source code structure but with minor omissions or missing detail.	Comprehensible documentation, and source code but with some important missing detail	Basic documentation, some effort is required to follow both documentation and source code	Poorly documented, explained, or presented, poor source code
Program evaluation (30%)	Comprehensive and convincing	Very good, showing some insight	Good, giving explanations	Basic, restatement of results	Largely missing
Report (20%)	Well documented, showing impressive work	Most work has been documented with sufficient detail	Some work has been documented with understandable detail	Basic work has been documented with limited detail	Incomplete, various parts are missing

To use the software, the student's enrollment list on the module is needed to be firstly generated and subsequently uploaded to initiate the system. The marking criteria, grades, the marks and the general comments for each grade will be set up as according to each individual marking grid. The wording in the general comment, say, in the case of perfect grade in file handling task, can be: "Perfect usability, justification of methods for file handling". It may need some efforts to select the appropriate wordings. Too generic comments may not be able to help students identify the area that they should focus into, and too detailed comments may confuse some students. For the assignment of a particular student, some judgements and considerations of which category the work falls into under different criteria have to be made and an example is given in Figure 2.

4. Feedback provision

It is noted that the feedback/comments of the criterion is general and brief which can be seen from the marking process. This is echoed from a student's feedback: "It seems that the output results are not always correct. This means that some statistics have not been done properly. It is recommended to check the code using a simple small data file".

A general feedback for the whole module has also been provided, which helps students to gain an overall picture of how their peers did on the assignment and to gain a better judgment of their own work. Samples of observations from this study are as follows: 1. Large proportions of students do not follow the requirements of the report format. Normally, the reports are not properly formatted missing out sections or subsections. 2. Large proportions of students do not include statistical results produced from the developed Huffman encoding system. By examining student's source code it is found that the results are not always correct, the codes are difficult to read and/or inconsistent with those in the report, lack of explanation, definition or misunderstanding of relevant concepts.

Some students may be disappointed by their marks and justifications for the undesirable scores will be requested and subsequent suggestions for how to improve their performances will be generated. Extracted from previous records sample comments to the students are quoted here as examples: "Within these 6 numbers none of them is correct. The correct ones are: 4122, 3886, 1.06073, 3, 7, and 1.714285;"

"The program evaluation is more about how and what the statistics could be obtained and it is not about what results have been generated."

Figure 1. The user interface of the marking software marking.jar.
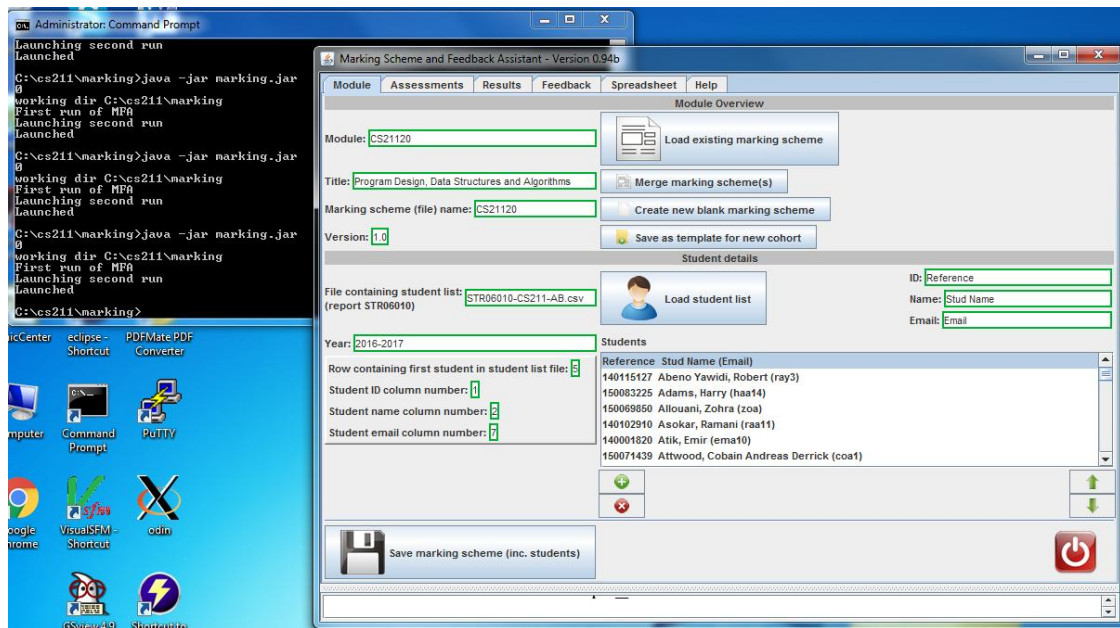
After the feedback is given and the marks have been released, there were 32 students asking for detailed comments and explanations. Amongst these there were 13 early requests and they were subsequently responded with detailed written comments. The remaining 19 requests were invited for face-to-face meetings for more detailed oral and interactive explanations. However, there were only 3 students turned up for the discussion session.

5. Evaluation

In this section the different means for the provision of feedback on the assignment have been compared. The performances of students enrolled in 3 academic years are listed in Table 2. The formats of the assignment had been changed from two pieces of work with equal weight in 2015-2016, to a single piece of work in 2016-2017 and finally only a single piece of work on a different topic in this academic year. Currently the assessment methods for the module are continuously monitored and revised subject to the feedback from students and external examiners.

Table 2. The performance of the students in different academic years.

Academic year	Assessment	#(students)	Average (%)	Std. dev. (%)	Failure rate(%)
2017-2018	Assignment (40%)	139	60.55	19.29	12.23
	Exam (50%)	145	48.59	21.70	37.24
2016-2017	Assignment (50%)	143	52.80	19.88	27.97
	Exam (50%)	154	42.89	20.10	45.45
2015-2016	Assignment (50%)	132	56.69	22.75	22.36
	Exam (50%)	147	43.63	22.60	36.73

It can be seen from the table that the failure rate of the module is relatively high, indicating that the module is a challenge for the students to learn and grasp. Some example feedbacks from the students about the assignment have been: "I agree with a lot of the marks and feedback given but was wondering if you could clear up a couple of points." and "it is very helpful". The moderator of the module commented: "Marking was found to be fair. Two categories – Program Design and Implementation – Huffman Tree and Report Self Assessment had high proportions of high marks so maybe these categories could have been more discriminating." "The quality and level of feedback seemed to be good." All results have been accepted by the departmental examination board and external examiners. The time spent on the feedback provision has been significantly reduced from about 30 minutes on average per assignment to about 15 minutes.

Figure 2. The actual marking of the assignment of a particular student.

6. Conclusions

The timely provision of feedback from a large class on a computer science module assignment is always challenging and time consuming. This paper investigates the issues in two directions: marking software and various strategies for the provision of feedback to students. A comparative study shows that a combination of more general feedbacks, detailed feedback on request, and face-to-face detailed oral and interactive feedback may be more effective and efficient than the direct detailed feedback on each assignment and that it better satisfies various demands from students. Such interesting discoveries may be applicable to the teaching of such large classes as Professional Issues in the Computing Industry.

Acknowledgments

References

Carless, D. (2006). Developing synergies between formative and summative assessment. *Proceedings of British Educational Research Association Annual Conference, Education-Line, 2006.*

Hatziapostolou, T and Paraskakis, I. (2010) Enhancing the impact of formative feedback on student learning through an online Feedback System. *Electronic Journal of e-Learning*, 8(2), 111 – 122.

Hyland, P. (2000). Learning from feedback in assessment. In P. Hyland & A. Booth (Eds.), The practice of university history teaching (pp. 233-247). Manchester: Manchester University Press.

Nicol, D. (2010). From monologue to dialogue: improving written feedback processes in mass higher education. *Assessment & Evaluation in Higher Education, 35(5)*, 501-517.

Snooker, N. (2013). Marking scheme and feedback assistant tool. April 2018, http://users.aber.ac.uk/nns/msg/mfa.html

THE BILINGUAL TEACHING METHOD IN ELEMENTARY SCHOOL: A CASE STUDY AT "RAFFAELLO SANZIO" ELEMENTARY SCHOOL IN TRENTO

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Abstract

My PhD project is an empirical qualitative research aiming at gaining a better understanding of how the bilingual teaching works. The most revolutionary approach to bilingual education in Italy is the Content and Language Integrated Learning (CLIL). The actors of this research are the pupils that will be attending the fifth grade at "Raffaello Sanzio" elementary school in Trento, Italy, the academic year 2018-19. The bilingual teaching project has been successfully proceeding there for over ten years; therefore, I strongly believe that it is worth exploring how and to what extent they are achieving the required level of content, and what can be done to improve those results.

In order to gather reliable qualitative data, I am going to employ several ethnographic research methods including classroom observations, digitally recorded videos, paired with interviews of the pupils, their parents, and their teachers. The perspectives of all these actors are crucial for establishing an ethnographic understanding of the context in which this pilot program was created and continues to function.

This doctoral research project seeks to add to the body of knowledge by focusing on the perception of the children regarding the bilingual project they have been participating in for the past five years and their accomplishments in English and the other subjects taught in English. Out of the six subjects that are taught to pupils through a foreign language (L2), namely in English – Mathematics, Science, Art, PE, Cross Curricular, and Geography – I will focus on three of them, that is Mathematics, Science, and Geography. This is because, on the one hand, they are generally considered difficult even in the pupils' first language (L1). On the other hand, because the evaluation of these three combined with the evaluation the level of English acquired in the 5th grade is sufficient for understanding the function of the CLIL teaching method (Contardi and Piochi, 2002). Besides, the evaluation of the other three subjects, i.e. Art, PE, Cross Curricular, require a different set of research methods given that they use movements, drawings and interdisciplinary activities.

Keywords: *Education, bilingual teaching, elementary school, CLIL, English.*

1. Introduction

This paper presents the research design of my PhD, a trans-disciplinary, qualitative research project that I will be conducting at "Raffaello Sanzio" Elementary School, in Trento, for the duration of the entire school year 2018-19. The aim of the research project is to analyze this pedagogical reality using ethnographic instruments. Since it appears that a specific social context has created the suitable circumstances for the bilingual project to come to life and apparently thrive, I will expand the theoretical gaze beyond pedagogy and involve other disciplines in the field of Educational Sciences such as sociology, ethnography and didactics. In doing so, I acknowledge that an educational reality needs a certain context to develop and such realities are better unveiled through a qualitative, in-depth, ethnographic analysis.

2. Design

The project begins with a review of the literature dealing with the topic in hand, followed by the theoretical framework of the paper. It continues with a definition of the concept of bilingualism using the Content and Language Integrated Learning (CLIL) term created in 1994 by David Marsh (Finland) and Anne Maljers (The Netherlands). The term CLIL is, in fact, used to define a teaching methodology that

refers to teaching pupils and students subjects such as Math, Science, Art, PE, Cross Curricular, and Geography through a foreign language (L2).

In the content part of the project, I will present the ethnographic data gathered in the field where I will be collecting data, as I have already mentioned in the introduction, for the duration of entire school year 2018-19. I will be doing data collection for what it may seem like such a long period of time because collecting relevant ethnographic information takes time and cannot be rushed (Campbell and Lassiter, 2015). The process has to be allowed to take its natural course in order for the thick ethnographic descriptions to be revealed (Geertz, 1973). In fact, experts in the field of ethnography state that PhD students who choose to do ethnography have to spend at least a year "in the field" and that time leads "to depth", and that ethnographers need "an extended period of on-site time in order to produce their characteristically rich and thick cultural descriptions" (Campbell and Lassiter, 2015, p.32). By rich and thick, Campbell and Lassiter mean the same thing that ethnographers Robert Emerson, Rachel Fretz, and Linda Shaw state when they say that

> "fieldnotes inscribe the sometimes inchoate understandings and insights the fieldworker acquires by intimately immersing herself [or himself] in another world [...] by directly running up against the contingencies and constraints of the everyday life of another people. Indeed, it is exactly this deep immersion – and the sense of place that such immersion assumes and strengthens – that enables the ethnographer to inscribe the detailed, context sensitive, and locally informed fieldnotes... [as] 'thick description'."
> (in Campbell and Lassiter, 2015, p. 66).

Interviews have to be transcribed as soon as possible after having recorded and so do the final draft of the fieldnotes, in order to avoid forgetting additional elements that a participant observer has still fresh in his or her memory but that fade over time (Campbell and Lassiter, 2015). Thus, this is what I will be doing after every session of observations, interviews or conversations with the participants in the project.

The third phase of the project is data analysis which includes sorting and coding the data and ultimately answering the research question. There is no one way to code the information obtained in an interview or during observation sessions in the classroom, therefore, the researcher has to create his or her own categories that are relevant for the topic and adapt them while going through the material. Campbell and Lassiter (2015) state that, in fact, the more you reread your fieldnotes and your conversation transcripts, the deeper your understanding of the categories you need to create is.

3. State of the art

The bilingual teaching method is widely used in most parts of the word, with well-established benefits from ancient times. Then, a bilingual Greek and Latin education was perceived as essential for the education of children, in our times, a second language is regarded as a *sine qua non* key to success (Tedick, 2005). This explains why the Autonomous Province of Trento has approved the "Extraordinary Legislative Plan for learning languages" - Trentino Trilingual - aimed at developing the foreign language knowledge in Trentino, through actions in the school system (Minutes, 2014). The Plan identifies, among other things, the CLIL methodology as an innovative teaching tool that increases students' linguistic exposure (idem). This is the context that favoured the creation of the bilingual and *veicolare* teaching projects at "Raffaello Sanzio" elementary school, in Trento.

There are several degrees of CLIL education ranging from projects that opt to teach one subject through the L2 to others that teach entire sections of the curriculum in the foreign language. That is the case of the bilingual project in Trento, Italy, that operates two sections: one that opted for an almost full immersion and one that has a more conservative approach with less subjects taught in the L2. The bilingual project comprises 20 hours of subjects taught in the L2, namely in English and upon which I will focus my research. The *veicolare* program includes only 9 hours of subjects taught in the L2, therefore, I consider it less revolutionary and, thus, less interesting for my research.

It is also important to know that, by adopting the CLIL teaching method, it does not mean that the learner's L1 is forgotten or barred, or that learners are penalized for using it in class. In fact, I will be dedicating an entire section of my research project to "trans-languaging" (Creese and Blackledge, 2010) and "code-switching" (Gumperz, 1982). These are two linguistic processes defined as the systematic and dynamic use of two languages to achieve a variety of communicative goals and they can easily fit in a CLIL research (Creese and Blackledge, 2010).

The bilingual project at "Raffaello Sanzio" elementary school has already been analysed in a PhD project concluded, however, in 2013, when the pilot was still at its beginnings. The researcher, Lucia Canavesio, is a teacher at this school and her project entitled "Bilingual Education in the Primary School:

Curriculum Study and Experimental Research on Language of Acquisition Effects in the Arithmetic Facts" mostly deals with psychological effects of bilingualism on the acquisition of Mathematics.

My research, however, analyses the present, a present in which the bilingual education project is an established reality. In fact, given the popularity of the bilingual class among parents, the Province made an effort to accommodate all requests four years ago, hence two bilingual classes were created. Unfortunately, it was not possible to continue with more than one class due to the limitations of the location, therefore, the program went back to one bilingual class per year. This aspect is relevant for my research because my ethnographic research will have as participants one of these two classes, but not both.

The idea of this research project was triggered by the fact that both my sons have successfully attended the project and are now pursuing the CLIL method in middle school. Moreover, given that I have been a teacher of English for over fifteen years first in my native country, Romania, then in my adoptive country, Italy, I have had the chance to privately give support to some of the pupils that were part of the program and whose parents were overwhelmed by the requirements of the endeavour. Thus, I have just enough knowledge of the project to be intrigued and start asking research questions.

The children's perspective, which is my major concern, is another element of novelty of the present research, given that, as I have mentioned before, the other researcher has focused only on the teachers' and the parents' points of view.

An additional element of novelty is the fact that I will not be just an observer of the class routines and events. I will adopt the role of participant, teaching a number of classes. For this opportunity I warmly thank the co-creator of the program, teacher Antonella Tomasi.

4. Methods

Given that children are less likely to easily engage in conversation-type interviews and their teachers are busy doing their jobs, I have decided to adopt other ethnographic research methods to elicit information from both children and teachers. In addition, Hymes alerts us that people do not reveal too much when asked but rather when observed: "Some social research seems incredibly [bold] to assume that what there is to find out can be found out by asking" (Hymes in Blommaert and Dong, 2011, page 8).

In situations that allow it, I will use digital videos and recordings, in others, fieldnotes and classroom observation. As for their parents, I will opt for individual interviews with a clearly defined set of questions that I will distribute to them beforehand. Campbell and Lassiter (2015) consider that, when the interviewees have an idea about the direction of the interview, the data collected is richer because they have time to think about their answers.

The general research question of this project focuses on how the language of acquisition affects content learning. Therefore, I will determine this by assessing the level of content the pupils were able to accumulate in Mathematics, Science and Geography in the 5th grade. In order to have a better grasp of the level of content children will have attained in the 5th grade, I will refer to quantitative secondary data, such as PISA and INVALSI test scores, within the overall ethnographic approach.

In a CLIL project, the level of English is paramount too and for that reason, it will also have to be determined. I will assess it both directly, through observation during all English classes and conversations with the children and indirectly during all the other subjects taught in English that I have decided to focus on. By paying attention to data collected using different methods, I aim to triangulate my findings, thereby increasing the validity of the results. However, the importance of triangulation in this study goes beyond the cross-validation of findings; it allows the capture of different dimensions of the same phenomenon.

5. Expected outcomes

At the end of the fieldwork period, after having gathered all the information, the actual data analysis will commence. Answering the initial research question is one of the main outcomes but not the only one. I expect to find out to what extent the language of acquisition affects content learning, but I also expect to discover all the elements that make this CLIL project so effective and popular in our town and hopefully potential elements that would contribute to improving the project for future generations.

5.1. Limits

The first limit of my research project is the fact that ethnographic activities take a lot of time and this PhD program is restricted to three years. Thus, the gathered data have to be cautiously analyzed,

sorted and carefully selected in order to help me to achieve my goals while keeping them to a reasonable amount that will not clog the actual writing of the research project.

Given that this is just a case study, and hence neither a top-down nor a bottom-up approach can be used, the outcomes cannot be generalised to all bilingual classes. The research, however, can be useful for language teachers and for schools that consider implementing a CLIL project in their curriculum.

I have obtained the verbal approval of the school principal and of most of the teaching staff, but there might be reluctant parents who would oppose or try to obstruct the fulfilment of the project. If that is the case, I will take the advice of the American professors and ethnographers, Elisabeth Campbell and Eric Lassiter (2015), and turn this into a source of ethnographic information by including it in the outcomes.

References

Amit, Vered (2000). *Constructing the field. Ethnographic fieldwork in the contemporary world* . Amit, Vered (Ed.). London: Routledge (European Association of Social Anthropologists).

Behar, Ruth (2012). *The vulnerable observer. Anthropology that breaks your heart*. Boston: Beacon Press.

Blackledge, Adrian & Creese, Angela (2014). *Heteroglossia as practice and pedagogy*. Dordrecht: Springer (Educational linguistics, Volume 20). Available online at http://www.springer.com/gb/BLDSS.

Bourdieu, Pierre (1991). Thompson, John B (Ed.). *Language and symbolic power the economy of linguistic exchanges.* English translation 1991. Cambridge: Polity in association with Basil Blackwell.

Campbell, Elisabeth & Lassiter, Luck Eric (2015). *Doing Ethnography today. Theories, Methods, Exercises*. USA: John Wiley & Sons, Ltd.

Canavesio, Maria Luisa (2012-2013). *Bilingual Education in the Primary School: Curriculum Study and Experimental Research on Language of Acquisition Effects in the Arithmetic Facts*. University of Trento.

Contardi, Anna & Piochi, Brunetto (2002). *Le difficoltà nell'apprendimento della matematica.* Metodologia e pratica di insegnamento. Trento: Erickson.

Creese, Angela; Blackledge, Adrian (2010): *Translanguaging in the Bilingual Classroom*: A Pedagogy for Learning and Teaching? In *The Modern Language Journal* 94 (1), pp. 103–115.

Emerson, Robert M., Fretz, Rachel I. & Shaw, Linda L. (2011). *Writing ethnographic fieldnotes*. 2nd ed. Chicago, Ill., London: University of Chicago Press.

Flick, Uwe, Kvale, Steinar & Angrosino, Michael V. *Doing ethnographic and observational research*; Barbour, Rosaline S. *Doing focus groups*; Banks, Marcus. *Using visual data in qualitative research*; Gibbs, Graham & Rapley, Tim. *Doing conversation discourse and document analysis* (2007): The Sage qualitative research kit. London: SAGE.

Geertz, Clifford (1973). *The interpretation of cultures*. Basi Books selected essays.

Gumperz, John Joseph (1982). *Discourse strategies*. Cambridge: Cambridge University Press (Studies in interactional sociolinguistics, 1). Available online at https://doi.org/10.1017/CBO9780511611834.

Malinowski, Bronislaw (2004). *Argonauts of the western Pacific. An account of native enterprise and adventure in the archipelagoes of Melanesian New Guinea*. 11th edition. London: Taylor & Francis.

Marcus, George E. (1998). *Ethnography through thick and thin*. Princeton, N.J., Chichester: Princeton University Press.

Rickey, M. Gail & Bein, Frederick L. (1996). *Students' Learning Difficulties in Geography and Teachers' Interventions*: Teaching Cases from K-12 Classrooms. In *Journal of Geography* 95 (3), pp. 118–125.

Robben, Antonius C. G. M. & Sluka, Jeffrey A. (2007). *Ethnographic fieldwork. An anthropological reader*. Antonius C.G.M. Robben and Jeffrey A. Sluka. Malden (Eds.). MA: Blackwell Pub (Blackwell anthologies in social & cultural anthropology, 9). Available online at http://www.loc.gov/catdir/enhancements/fy0802/2006006923-b.html.

Schensul, Jean J. (1999). Enhanced ethnographic methods. Audiovisual techniques, focused group interviews, and elicitation techniques. Lanham, MD: Altamira Press (The ethnographer's toolkit, v. 3).

Spradley, James P. (1979). *The ethnographic interview*. New York, London: Holt.

Tedick, Diane J. (2005). *Second language teacher education. International perspectives*. (Ed. Diane J. Tedick). Mahwah, N.J., London: Lawrence Erlbaum Associates.

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A PATH OF SUBTLE CHANGE
A Qualitative Study on the Process of Self-regulated Learning in Classroom Situation

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Abstract

Intensive efforts of educational reform in China has captured wide attention in the Chinese society to the cultivation of students' core quality. "Learning to Learn", as one of the standards of core accomplishment, becomes an important objective for education. Therefore, Self-regulated Learning (SRL) has become a heated topic in education research. For a long time, most studies on SRL appeared in the field of educational psychology, such as the study on the influence factors of SRL; the correlation analysis between self-efficacy and academic performance. However, the process of SRL in classroom situation and learning cycle analysis still remains to be further studied. This study applies the grounded theory methodology to study on the process of SRL in classroom situation. The author establishes a theoretical framework of SRL in classroom situation, which includes three dimensional classifications: the type of classroom learning situation, the stage of process of SRL and the degree of autonomy of SRL. From the perspective of social cognition theory, the author further took a micro analysis on the students' SRL process in the three classroom situations, including problem interaction situation, cooperative learning situation and task management situation. This study finds that the SLR in real classroom situation is related to the students' preference to the types of classroom learning situation; It is influenced by the interaction of individual, behavior and social situation; It is a gradually changing process, from "want to learn", "be able to learn "to "keep learning".

Keywords: *Self-regulated learning, classroom situation, social cognition theory, degree of autonomy.*

1. Introduction

Under the education reform background, Self-regulated learning(SRL), as a suitable learning method for modern education, has been paid a increasingly attention by the education research field in many countries. Self-regulated learning (SRL) is a relatively free way of learning, and its learning field can be family, classroom, library, etc. Compared with self-regulated study of other fields, the classroom has its own uniqueness. In the classroom, teachers, students and classroom environment interact with each other.

Scholars both from the West and China have devoted sufficient attention to SRL, both in theoretical extrapolation and in practical applications. Zimmerman and Schenker based on Bandura's theory focuses on the relationship between self-regulated learning and development problems, further will apply to self-regulated learning in the process of social cognition, formed the independent learning process and patterns of new construction. (B J. Zimmerman, 1990) Few, however, have studied students self-learning processes in the classroom. (Dale Scott Rideley, Bill Walther, 2008) On the one hand, most studies on self-learning has centered on individual cases, lacking in systematic and global analysis of students' self-learning in the classroom. On the other hand, research on self-regulated learning among the Chinese scholars mainly relies on field research and empirical analysis. (Wang Jian, 2007) The less utilized qualitative approach embedded in the classroom setting can offer the field tremendous potential to tap into the degree of students' conscientiousness in self-learning as well as the different areas in which students are motivated to carry out self-regulated learning. (David Little, 2009)

To complement the extant literature, this study adopts a grounded theory research method approach to explore how students navigate self-learning by interacting with the instructors and fellow classmates in the specific context of the classroom. This is an extension of previous studies on the same subject. The objective of this study is to understand the relationship between individual endeavor and classroom interaction in the entire process of students' self-learning within the classroom.

2. Methodology

Using multi-layer random selection method, this study selects 20 students from two classes in each grade (6 classes total) in X middle school in Gansu Province, China to participate in the surveys. This school is selected because it is a passionate advocate for "suitable classroom mode", tailoring classroom into setting suitable for students.

To assess the theoretical perspective put forward above, I will conduct grounded theory method. I mainly applied classroom observation, interviews of teachers and students (including group interview and individual interview) and calculate students writing notes as the study resources. Specifically, the observed CSRL situation will be recorded by research notes, using thick description to record the subjects' learning process and performances. Also, the structured dairy and notes can be used as the research materials. The open-ended interview is useful for this study because detailed, constructive answers in interviews better resemble the reality of students' self-learning than multiple-choice surveys. (Chen Xiangming, 2000) It is supposed to explore the differences of internal SRL (motivation, strategies, metacognition) and external SRL (dialogue with learning materials, peers and teachers) through the further deep interviews. I will then analyze the research materials using NVIVO (qualitative data analysis software). The results will be presented in thick descriptions afterward and one class case will be analysed and explained as a sample.

3. Data analysis and results

Researchers conducted preliminary coding and focusing coding on the interviews and observation data of 20 students randomly selected in grades five and six. The study summarized the types of self-directed learning situations commonly seen in students' classrooms including: interactive Q&A situations, cooperative learning, task management situations. That is to say, students' SRL may occur in one or more classroom situations.

After determining the self-learning situation in the classroom, the researchers coded the key words of the research data in different classroom learning contexts, thus linking the SRL situation with the process of SRL. On this basis, the researcher used Zimmerman's self-learning process cycle model as the theoretical basis, and further divided the key words of the SRL process that appeared in the above scenarios from the self-planning stage, behavioral performance stage, and self-reflection stage. (Zimmerman, 2001)

Through the transition from initial coding, focused coding, and axial coding, the researchers further classify the performance of students' self-learning process in the classroom situation. According to the frequency of key words and the sorting of reference points, students are classified according to the degree of Autonomy, thus forming the final theoretical framework for SRL in the classroom.

Table 1. The Theoretical analytical framework of SRL in classroom.

The types of situation	The degree of Autonomy	The process of SRL		
		Self-planning stage	behavioral performance stage	self-reflection stage
Q&A interactive situation	Passive answer question	——	Cognitive strategies, self-guidance, resource management	——
	Positive Answer question	Strategic planning Extrinsic motivation	Organization strategy, precise strategy	Teacher recognition, self-evaluation
	Positive ask question	Strategic planning Intrinsic motivation, Target setting	Critical thinking, independent questioning, active interaction	Self-reflection, Self-evaluation
Cooperative learning situation	Divided work	(passive)take responsibility	Divide task, data collection	Self-reflection, Self-evaluation
	Participated work	Independent choice Motivation and belief	Initiative, active participation, resource sharing	Self-evaluation, Interactive-evaluation
	Cooperated work	Independent choice, Heterogeneous equilibrium	Atmosphere creating and sharing learning, actively cooperate. Listen to feedback	Self-reflection, Group reflection
Task-management situation	Depended style	Task analysis	Academic help	——
	Independent style	Task analysis, Target setting. Time management	Self-solve, skill exploration	Task reflection, Self-recording
	Adjustable style	Task analysis, Target setting	The degree of difficulty adjustment, time adjustment, Environmental regulation	Self-exploration, Self-identity

(I) SRL in Q&A interactive situation

Q&A interactive situation is one of the common teaching situations in the classroom. Question interaction is not only a kind of dialogue and listening in classroom teaching, but also a way for teacher-student communication and knowledge generation. SRL is a dual, autonomous experience in this situation. On the one hand, due to the particularity of its interaction situation, Students' autonomy can be observed in the active interaction process with the teacher and classmates, actively participate in the dialogue and discussion. On the other hand, it also requires learners to carry out an internal cycle of SRL before and after answering questions, that is, planning, solving, answering and reflection. Therefore, in Q&A interactive situations, the student's process of SRL is both a process of internal problem solving and a process of externally autonomous interaction. The acquisition of students' autonomous learning ability has experienced a process from low-level to high-level, from single-dimensional to multi-dimensional, the transition from passive respondents to active respondents to autonomous questioners is a gradual and relatively lengthy process. It is also the gradual impact of the interactive environment on self and behavior.

Teachers ask student A at different times respectively, and his SRL performance is not the same. Student A was willing to answer the question after he had just been named by the teacher. Later, he actively raised his hand to participate. At the end of this semester, he was willing to correct his mistakes and speak out his doubts to ask the teacher for help. (From the classroom record 1/5/9)

It can be seen that even in the interactive environment of the same problem, there are differences among different students, and there are also differences in the SRL's status of the same student in different periods. At this time, the encouragement and guidance of teachers will motivate students to set goals and strategic plans for answering questions and expect results. When students have formed a proactive problem awareness and self-motivation, students are more concerned with the realization of intrinsic values than with external rewards. Such effective teaching will promote multiple dialogues, and the multi-cycle question and answer process will generate multiple interactions.

(2) SRL in Cooperative learning situation

Cooperative learning is essentially a collective, self-directed learning. In the cooperative learning situation, students' self-study is based on the division of tasks and learning together. (Wang Jian, 2007) SRL in cooperative learning situations must satisfy two conditions. The first is the autonomous completion of their part of job within the individual. The second is to participate in the process of group cooperation. Through classroom observation and after-school interviews, it was found that in the context of cooperative learning, the students received help not only from teachers, but more importantly from peers. Peer's help is an effective external support. They can provide social assistance for students who need help, such as encouragement and praise. In addition, compared to the former situation, the students in cooperative learning will cause students to spontaneously create a "community" atmosphere, thereby promoting the development of cooperative learning.

Students who tend to divided work are not strong in their ability to cooperate, but in the learning environment of the cooperative group, peer expectations and trust will enable them to have positive emotions and undertake their own tasks. Students in the "participated work" stage enjoy the pleasure of participating in cooperation. Therefore, this atmosphere of peers supporting has become a support factor for their self-directed learning. Compared to the former two types of learners, students who tend to "cooperated work" will in turn influence "behavior" through "self". The environment in which he lives, if the current "cooperative learning environment" is not what he is satisfied with, he will use "personal motivation" to change the "behavior" of himself and others, including active sharing, balanced heterogeneity and listening to positive responses. Create a "harmonious and warm" community atmosphere so that everyone can express their opinions and make cooperative learning become chorus instead of solo. (Manabu Sato, 2004)

(3) SRL in the task management situation

The task management situation can be said to be the most common autonomous learning classroom situation. The teacher arranges for the student task in the rest of 10-20 minutes of the class or asks the student to study independently on the remaining time. At this time, all the students in the class began to demonstrate "self-regulated learning" or "self learning" at this time. However, in the process of independently completing the tasks, the degree of student autonomy is also not the same. According the research analysis, it can be divided into three types: "dependent style", "independent style" and "adjustable style".

Through in-depth interviews and observations as well as tracking students learning notes, we found that "dependent" students are more affected by the "implicit role model" than the dominant "environmental influences" in the former learning situations. This external role model will enhance the dependent students' self-motivated beliefs, so that they are willing to change their learning behaviors by imitating role models, and perform active self-monitoring, self-observation, and evaluation. Students in the "independent stage", because of their stronger self-knowledge, know what they need, so their role

model is more likely to be a teacher. As a result, they will imitate their teachers for independent previews, set goals, and extend and expand knowledge during the independent task phase. While adjustable students will make changes to the seats themselves or adjust the changes in the classroom lighting to optimize their learning environment. The task adjustment, learning time management, and the search for learning resources will maximize the efficiency of their own learning. Therefore, although in the task completion situation, students are basically in a state of completing tasks alone, interactions with peers and teachers are less relative to the first two learning situations, but they are just relatively independent, but not monologous learning.

4. Discussion

(1) The relationship between SRL and students' preference for types of classroom situation

Many people think that students with good academic performance must have strong SRL ability. However, it has been found that simply equating learning achievement with SRL ability is arbitrary. In this study, through the division of specific classroom learning situations and the process stages of SRL, we find that under the same classroom context, different students' SRL performance is different; the same student, in different kinds of classroom situations, their process of SRL and the degree of autonomy are also different. Therefore, in the effective development of classroom teaching, teachers must take into account the tendency of classroom learning situations while cultivating students' ability of SRL. Good learners are better able to find appropriate learning contexts, optimize learning outcomes, and actively and effectively adjust and adapt to unsuitable learning situations. However, this does not mean that the "novice" learners autonomy is not strong. Teachers can guide and inspire them in their propensity learning environment, and they can expand their learning situation consciously according to their character and learning style.

(2) The process of SRL in the classroom is affected by the interaction

SRL is often misunderstood as a student's "self-study" for a long time. Therefore, the process of self-directed learning is also considered to be a person's single-subsidiary, like an island closed loop. Students learn in a "community" environment in the classroom. The process of SRL will be influenced by the guidance, disambiguation, and evaluation of the teacher, as well as help from peer model, cooperation, and sharing. This kind of SRL not only helps students complete the students' internal self-learning cycle in the "existing development zone", but also inspires students to surpass the "existing development zone" and reach the "recent development zone". Teachers and peers work together to achieve the goal of learning.

(3) SRL in the classroom is an invisible gradually process of growth

SRL is not a one-time process, and it is not a label for existing capabilities. Instead it is a gradual and multi-dimensional growth process. It is affected by the learner's own learning motivation, learning strategies, self-consciousness, self-belief and other factors. It is also influenced by the outside world's learning environment and social interaction. For example, in the process of Q&A -interactive learning, students passively answers question in the beginning of term ,and then starts to take the initiative to answer questions, and try to actively raise hands in other subjects, finally they can independently think about problems and ask questions. The process of this transformation is the growth of his SRL. In terms of different classroom situations, students will also migrate their autonomy in one classroom context to other classroom contexts due to the influence of self, behavior, and environmental influences, resulting in multi-situational autonomy generation.

5. Conclusion

This study aims to enlighten educators to rethink the four misunderstandings about the SRL in classroom. Firstly, treating students' SRL as "sit learning", assuming that students who remain still on their chairs are the most efficient self-learners. In fact, we can find SRL also need interaction, movement even discussion in classroom situations. Secondly, treating self-learning as independent study without other's help. SRL is an interactive learning process not an isolated island. Third, treating self-learning as "a label of ability". Actually, it is shown that everyone has a potential of SRL, according to their preferred choice of classroom situations. So this study on one hand, encourages students explore from "want to learn" to "able to learn" and then finally "know how to learn". On the other hand, it enlightens the reformation of teachers' instruction for the development of students' SRL and the construction of new relationship between teacher and student.

References

Chen Xiangming. (2000).Research Methods of Quality and Social Science Research[M]. Education and Science Press, Beijing. (in Chinese).

Dale Scott Rideley , Bill Walther . (2008). Self-regulated Classroom: the function of active classroom environment. [M]. Xiangqin Chen translated. China Light Industry Press.

David Little. (2009). The way to self-regulated learning [M]. Yongzhong Qiu translated. FuJian Education Press.

Manabu Sato.(2004). Happy Learning：Dialogue Learning. [M]. Zhong Qiquan translated. Education and science Press .(in Chinese).

Wang Jian .(2007).An Introduction to the Classroom Study[M]. People's Education Press, Beijing. (in Chinese).

Zimmerman, B .j .,& , D. H.(2001).Self -regulated learning and academicachievement :Theory , research , and practice(2nd ed.). Lawrence Erlbaum Associates, Inc.

Zimmerman, B. J. (1990). Self-regulated Learning and Academic Achievement: An Overview. Educational Psychologist, 15(1),3-17.

TEACHERS AS HACKERS- IMPLICATIONS FOR 21ST CENTURY TEACHER EDUCATION

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Abstract

Today's education systems are struggling- struggling to stay relevant in a constantly changing world, struggling to offer a model for 21st century teaching and learning and for reaching social goals such as equity. Previews change efforts demonstrated that the future of schools is in the hands of teachers- they are the once that should and can influence education systems from within.

A qualitative study explored the characteristics and circumstances of public school teachers from Massachusetts who act innovatively in their classroom and create pedagogical change. The findings indicate that those teachers act as "hackers"- they are passionate, they are reflective, and they accept or even invite uncertainty. In addition, teacher who act as hackers are willing to take risks, they utilize existing resources and use technology to serve their pedagogical goals.

The presentation will include the results of the study as well as insights and recommendations regarding teacher education programs and the ways in which they can help future teachers acquire relevant habits of "hacking". Those include skills as reflecting about pedagogy, critical thinking, collaboration, lifelong learning and risk taking.

Keywords: Teacher education, innovation, hacking, change, technology.

THE FIRST TEACHING EXPERIENCES OF PRE-SERVICE COMPUTER SCIENCE TEACHERS

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Abstract

International efforts and initiatives regarding increase the efficiency of computer science (CS) education have raised during the last ten years. In the literature, it can be seen that the effectiveness of different methodologies and technologies used in CS education have been investigated by researchers. Especially, after Wing's (2006) article in which she focused on the concept of computational thinking and defined it as a vision for CS educators, interdisciplinary education approaches were integrated into CS education methodologies. Today, the role of CS teachers became more important than before because of the new interdisciplinary content and hard-to-achieve outcomes such as the development of children's computational thinking skills. Pedagogical qualification, technological expertise, and high-level communication skills can be listed among some important competencies expected from CS teachers. Giving practice-based feedbacks to pre-service teachers is important for them to be able to have these vocational qualifications before graduation. The "Teaching Practice" courses of Education Faculties includes intensive in-class educational practices and feedbacks. Hence, in this study, the researchers were focused on the evaluation of pre-service CS teachers in a "Teaching Practice" course. The study was carried out in Yildiz Technical University, Department of Computer Education and Instructional Technologies. The senior students of the department gave lectures at secondary school level for 2 hours a week, during 11 weeks as total. The first teaching experiences of 15 pre-service CS teachers were evaluated with a rubric including 28 items divided into 3 sections. The sections of the rubric were "Planning", "Education" and "Communication". The results of the observations presented in the study and suggestions were made about the features that pre-service CS teachers should develop.

Keywords: Computer science education, Teaching experience, Pre-service teachers.

ONLINE VIDEO IN COMPUTING CLASSES IMPROVES THAI STUDENTS' ENGLISH

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Abstract

The research investigated whether the innovation of online video media spoken in both Thai and English with subtitles improved English skills for new students in Business Computing at Suratthani Rajabhat University. Ninety-two students were split equally between an experimental group using video online media for learning and a control group learning the same content face to face in the classroom. Evaluation was conducted through achievement and satisfaction tests. All students using the video online media passed the achievement test standard but only half of the control group passed. Comparison of results of the two groups showed no significant difference between the pretest scores while the experimental group had a significantly higher average posttest score than the control group. The achievement test results of the experimental group were significantly higher than the Control group in every English skill. The students' satisfaction was at a high level overall, they were satisfied with the innovation, found it interesting and easy to understand.

Keywords: Online video, cloud computing, English skills, online learning.

1. Introduction

The Ministry of Education, Thailand (2011) is paying more attention to the development of English language ability among Thai youth by targeting young Thai people to communicate in English effectively as can be seen from the increase in the international courses numbers in Thai intuitions from elementary level to university level in both public and private institutions. Wutwongsa (2015) reported that IMD World Competitive Yearbook 2011 found that Singapore has the highest level of English proficiency in ASEAN countries followed by Philippines and Malaysia, with Thailand below Indonesia. This is in line with the English Proficiency Index (EPI)i which has five levels: very high, high, moderate, low and very low. The results show that the proficiency of English in Thailand is very low, lower than Indonesia and Vietnam which have moderate proficiency. It is also in line with the TOEFL test results of the English proficiency test of graduates in ASEAN countries which showed that Singapore and the Philippines were followed by Malaysia, Indonesia, Myanmar, Vietnam and Cambodia which all had average scores of more than 500 for English language skills. The Thai language proficiency score is lower than 500, which is the same level as Laos. This indicates that Thai graduates of the English language have great problems in using English and shows the problem of using English skills is a priority. In addition, the National Institutes of Education (2012, 2013) reported the results of the Ordinary National Educational Test (O-NET) where the average score on the use of English skills of final year high school students in Thailand in the academic year 2012 was 22.13, and in the academic year 2013 was 25.35 which although improving was still low. Therefore, the need for development of English language skills is vital. A survey to improve the 2012curriculum of Bachelor of Business Administration of Business Computer Department, Surattani Rajabhat University found that one of the problems faced by first time students entering the Business Computer Department was the lack of a foreign language, especially English. Moreover, the experiences of the researcher teaching first year students in academic year 2015 in the Fundamentals of Computer Science and Technology Module found that 80% of students could not explain the meaning of technical terms, and the 20% of students who could pronounce the technical terms correctly did not understand the meaning. In order to improve the English skills of these undergraduate students the researcher has developed a series of instructional activities focusing on English language skills through using online video about the Cloud Computing topic. It aims to make learners familiar with the use of English skills in listening, speaking, reading, writing, presenting, and discussing. This will give

students more confidence in using English in computing to make graduates acceptable to employers and increase English proficiency in computers and information technology in line with the policy of Thai youth to develop knowledge and ability to use English equal with other countries in the ASEAN region.

The Research Question for this study was "Can learning online using video and captions help Thai students learn English IT content?" and the approach adopted is original by presenting in Thai with English captions to help Thai students read English and presenting in English with Thai subtitles to help Thai students listen to English and then presenting in English with English subtitles to help Thai students hear and read the English without any supporting Thai speech or writing. The rationale for this approach was that such an English learning process from easy to difficult using video online could help university students having a low level of English skills learn English. This approach required the researcher to develop the online video media in Cloud Computing instructional package with emphasis on English skills in listening, speaking, reading, writing, presenting, and discussion. Evaluation involved comparing the students' academic achievement scores before and after using the instructional package and measuring students' satisfaction level towards the video online instructional package.

2. Literature review

No previous published research could be found adopting a similar research methodology to this study but there has been research on the benefits of captioning and the use of video for language learning. There has been research showing how captions/subtitles can be helpful for reading and literacyii but usually the captions/subtitles are in the same language. Yabe (2015) investigated how much more would university students in the US be willing to pay for a captioned online class rather than for a non-captioned online class and found that international students would be willing to pay more than deaf and hard of hearing students or native speakers. Wiseman and Odell (2014) raise the issues that the challenge using English as the Medium of Instruction presents to lecturers is "how to present their subject clearly and concisely in another language" and that students' perceptions of lecturers' English language proficiency relate to perceptions of general competence. Huang et. al. (2016) split sixty Taiwanese university students into two groups. One group watched English lecture recordings with captions and the other group watched them without captions and then both groups were tested on the content and also surveyed about their cognitive load/mental effort used. Captions improved students' performance and reduced cognitive load and were particularly beneficial for low English Foreign Language ability students. Research and experience has suggested that 3- 4 minutes is a good length of video to keep viewers engaged and this was therefore chosen for the length of videos in this study.iii iv Al-Seghayer (2001) studied using graphics and multimedia in teaching a second language effectively by testing the knowledge of vocabulary meaning and reading skill. There were three forms of teaching to describe meaning: only text, text and picture, and text and video. The data was collected by interviewing and asking questions using a questionnaire with 30 participants. The results showed that text with video helped leaners with their imagination about the topic more than learning from text with PowerPoint because the combination of multimedia, voice, and text together helped learners to understand more than only text and picture. Bal-Gezegin (2014) studied the comparison between using video and PowerPoint in writing an article by 28 students in France. The participants were divided into two groups. The first group watched a video clip with a French voice and subtitles. The second group listened to a teacher who read text in French and showed four PowerPoint slides. The results found that the first group wrote an article significantly better than the second group at p = 0.05 level because the video connects language with meaning more than the PowerPoint media. Shimogori et. al. (2010) studied how automatically generated captions help an individual to communicate in English to non-native speakers. The results showed captions helped in understanding English listening skills, and especially helped improve the ability in listening skills for half of the learners in the class to reach an intermediate level and also helped improve abilities in other English skills. Teaching by getting students to watch online videos outside class time is known as 'flipping the classroom'v. Wald (2011) showed how using captioned videos in a flipped classroom allows students to go at their own pace and watch the recording as many times as they needed. Bishop (2013) surveyed research about the flipped classroom. The key point of this form of teaching and learning is that there are activities in teaching and learning in both the classroom and outside the classroom. There was also evaluation of the methodology in teaching and learning of each activity. The results found that students were more satisfied in learning in a classroom than watching a video. However, students preferred learning using activities more than just listening to a lecture. Moreover, the Flipped Classroom increased students' learning performance by 21% compared to a traditional classroom. However, this study was at an early stage and needed more research, especially on classroom activities.

3. Research methodology

This research study used a comparative research model to compare the learning achievement of two groups of learners: the experimental group used video online media and the control group was taught face to face in a classroom. The samples were two groups of 46 undergraduate 1st year students from the population of 514 students in the Business Computer Department, Faculty of Management Sciences, Suratthani Rajabhat University who enrolled in the Fundamentals of Computer and Information Technology in Semester 1 2016. These two groups used the same content but a different teaching approach using different types of teaching media. The experimental group accessed a video recording of a PowerPoint presentation online while the control group had the teacher present the same PowerPoint presentation face to face in class. The videos were produced simply using PowerPoint with the audio recorded using the MacBook air's own microphone. Both groups were asked to do a pretest before the experiment and a posttest after the experiment. The achievement measurements were focused on the English skills of listening, speaking, reading, writing, presentation, and discussion before and after using the instructional package developed by the researcher. The achievement of the experimental and control groups were compared by scores from pretest and posttest, as well as performance scores of presentation capabilities and the discussion capabilities in English. Three presentations of the same material using different formats were used to help students learn both written and spoken English through listening and reading:

1) Thai slides, Thai speech, and English subtitles to help understand the subject and concepts in Thai and English by reading English by learning the meaning of the English subtitles.

2) English slides, English speech, and Thai subtitles to help listening to English (and therefore also later help with speaking English) by learning the meaning and pronunciation of spoken English and reading English (and therefore also later help with writing English) through written English slides.

3) English slides, English speech and English subtitles to help practice listening to English (and therefore also later help with speaking English) and learning the meaning and pronunciation of spoken English and reading English (and therefore also later help with writing English) through written English slides and subtitles without the support of any spoken or written Thai. Starting with English speech and English subtitles would have been too difficult for the students to learn new technical vocabulary in Cloud Computing.

For the student presentations the Control Group produced English slides, spoke English and produced a transcript in English while the Experimental Group created an Online Video with English slides and spoke English with English captions. For the student discussion the Control Group was asked questions and they wrote down their answers/discussions on the board while the Experimental Group discussed questions on Facebook by typing answers/discussions.

4. Results

Scores within groups and between groups and satisfaction ratings were analysed using t-tests. All students using the video online media passed the achievement test standard but only 54% of the control group passed. Comparison of results of the two groups used the independent 2 tail t-test. There was no significant difference between the pretest scores of the two groups. The posttest scores showed that the experimental group had a significantly higher average score than the control group at the p level of 0.05. The achievement test results of the experimental group were significantly higher than the Control group at p level 0.01 in every English skill. The students' satisfaction for the innovation was at a high level overall, the students were satisfied with the innovation, the innovation was interesting, and the innovation was easy to understand. Experts who have at least 5 years' experience in Computer Science who know English very well were asked to evaluate the presentations and discussions. Figure 1 shows the example of English presentation and English subtitle for the experimental group. Figure 2 shows an example of English presentation and English subtitle for control group. Figures 3 and 4 show examples of English presentation and English subtitle of a participant from the control group

Figure 1. The example of English presentation and English subtitle for experimental group.
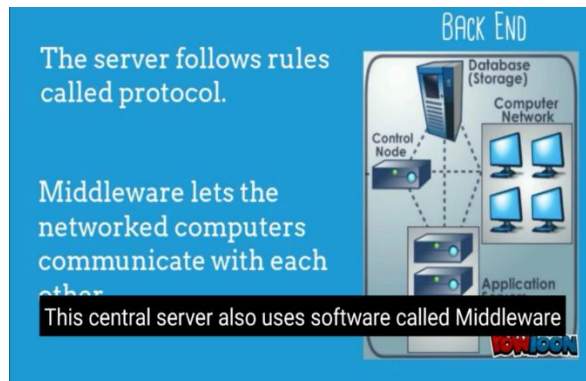
Figure 2. Example of English presentation and English subtitle for control group.

Figure 3. Cover picture of a participant's work.

Figure 4. Participant's work describing meaning of Cloud Computing.
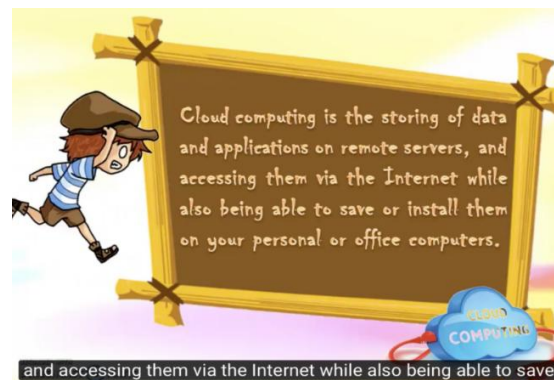
5. Discussion and conclusion

The pre-test scores of the two groups were very similar which suggests the two groups have a similar potential in learning English. The post-test scores of the experimental group were higher than the control group at the 0.001 level of significance. The average satisfaction score was high. The English learning process from easy to difficult (Thai slide, Thai speech and Subtitle English, then English slide, English speech, and Thai subtitle, and English slide, English) helped learners understand English in a better way than pushing them to learn only English at first because the students at the university have a low level of English skills.

References

Al-Seghayer, K. (2001). The Effect of Multimedia Annotation Modes on L2 Vocabulary Acquisition: A Comparative Study. *PhD thesis, University of Pittsburgh*. Retrieved 27/8/2015.From http://llt.msu.edu/vol5num1/alseghayer/default.html?ref=vidupdatez.com/image.

Bishop J L, Verleger, M A. (2013). The Flipped Classroom: A Survey of the Research, *120th ASEE Conference*.

Bal-Gezegin, B. (2014). An Investigation of Using Video vs. Audio for Teaching Vocabulary, *Procedia - Social and Behavioral Sciences*, Volume 143, 2014, Pages 450- 457, ISSN 1877-0428, available from http://dx.doi.org/10.1016/j.sbspro.2014.07.516.

Huang, Y. Shadiev, R. Hwang, W. (2016). Investigating the effectiveness of speech-to-text recognition applications on learning performance and cognitive load. *Comput. Educ.*101, C (October 2016), 15-28. DOI: https://doi.org/10.1016/j.compedu.2016.05.011

Wald, M. (2011). Synote: A Free Collaborative Multimedia Web Technology Helping Teachers and Students Transform Teaching and Learning in Schools, Colleges and Universities. *15th Biennial of the International Study Association on Teachers and Teaching*

Wiseman, A. Odell, A. (2014). Should non-English-speaking countries teach in English? *About the Voices Magazine. British Council*. Available at: https://www.britishcouncil.org/voices-magazine/should-non-english-speaking-countries-teach-in-english Date accessed: 03 Aug. 2017

Wutwongsa, N. (2015). Motivational Strategies: Enhancing English Language Skills. *Executive Journal*. Vol 34. Issue 1. January -June.

Yabe, M. (2017) Benefit Comparison of Captioned Online Courses for Shimogori, American, International, and Deaf/Hard of Hearing Students. (2017). From the Viewpoint of Individual Value and Total Value. *Journal of Accessibility and Design for All,* [S.l.], v. 5, n. 1, p. 27-46, may 2015. ISSN 2013-7087. Available at: <http://www.jacces.org/index.php/jacces/article/view/92/103>. Date accessed: 03 Aug. 2017. doi:http://dx.doi.org/10.17411/jacces.v5i1.92.

The Ministry of Education, Thailand (2011) the National Institutes of Education (2012, 2013) Shimogori et. al.

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[i] http://www.ef.co.uk/epi/

[ii] http://www.zaneeducation.com/video-subtitles-captions/subtitle-and-closed-captions-research.php

[iii] http://blog.edx.org/optimal-video-length-student-engagement

[iv] http://www.comscore.com/Insights/Press-Releases/2014/2/comScore-Releases-January-2014-US-Online-Video-Rankings

[v] https://net.educause.edu/ir/library/pdf/eli7081.pdf

USING SPEECH RECOGNITION TRANSCRIPTION TO ENHANCE LEARNING FROM LECTURE RECORDINGS

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Abstract

This paper explains how speech recognition captioning with collaborative editing provides affordable transcription/captioning of lecture recordings, supports inclusive learning and enables universities to comply with the law. It considers how lecture recordings can be inclusively enhanced and what features in a lecture recording system would be beneficial for disabled students. The paper provides evidence that speech recognition can be more accurate than human transcribers and that students can collaboratively correct caption errors when commercial manual captioning is too expensive for universities.

Keywords: Speech recognition, transcription, captioning, collaborative editing, lecture recording.

1. Introduction

In the UK cuts to the Disabled Students' Allowance for notetaking (Johnson 2015) requires universities to fund an inclusive approach to learning and teaching to support disabled students (Supporting disabled students 2017). The Inclusive Teaching and Learning in Higher Education as a route to Excellence: Disabled Student Sector Leadership Group report (Layer 2017) stated:
"there are some very simple changes that can make a significant difference to student outcomes around inclusive practice … Allow or facilitate the recording of teaching"
This paper considers ways in which such recording of teaching can be enhanced to better support disabled students.

2. Captioning

The National Association of the Deaf have sued Harvard and Massachusetts Institute of Technology (Lewin 2015) and Netflix (Whitney 2011) for not captioning videos. Netfix subsequently agreed to caption all their videos (National Association of the Deaf v. Netflix 2012)

TED Talks use commercial manual captioning (TED's Open Translation Project 2009) to enable hearing impaired people to follow the talks and allow video search but this is too expensive for universities to caption and transcribe lectures.

Wald (2017) describes a 2012 study which found the average commercial captioning cost of lecture recordings was $260 per hour with the most expensive being $407 and suggested that a university could save money by paying students to edit speech recognition produced captions.

Speech recognition accuracy continues to improve and can now be more accurate than professional human transcribers (Xiong et al 2017).

The Equality Act 2010 requires universities to make anticipatory reasonable adjustments (Disability Rights UK Factsheet F56, 2017) and so universities should caption all their lecture recordings rather than only caption a lecture recording if requested by a deaf student.

It is important for teachers to make a good quality recording and it is possible to also record and transcribe the speech of the students using a wireless microphone, either handheld and passed around or throwable (Catchbox 2017) or using an app on a mobile phone (Crowdmics 2017) and enable students to correct any speech recognition errors live in the class (Wald 2012).

As the quality of the recording degenerates then speech recognition may still struggle more than human transcribers and a solution to this problem of improving the accuracy of any speech recognition transcription is that it is possible to use students to collaboratively error correct errors and verify the transcript by automatically comparing their corrections (Wald, 2013).

3. Features required to enhance learning from lecture recordings

A system like Synote (Synote 2017) works as shown in Figure 1 by the speech of the lecture recordings being transcribed by speech recognition to automatically produce the captions. The images and slides are automatically synchronised with the transcript to enable printing out all of the information. Any errors in the captions can be collaboratively corrected by the students resulting in accurate captions for the recordings and the scoring of corrections can be used as a basis for the student rewards.

Figure 1. Schematic of Synote.
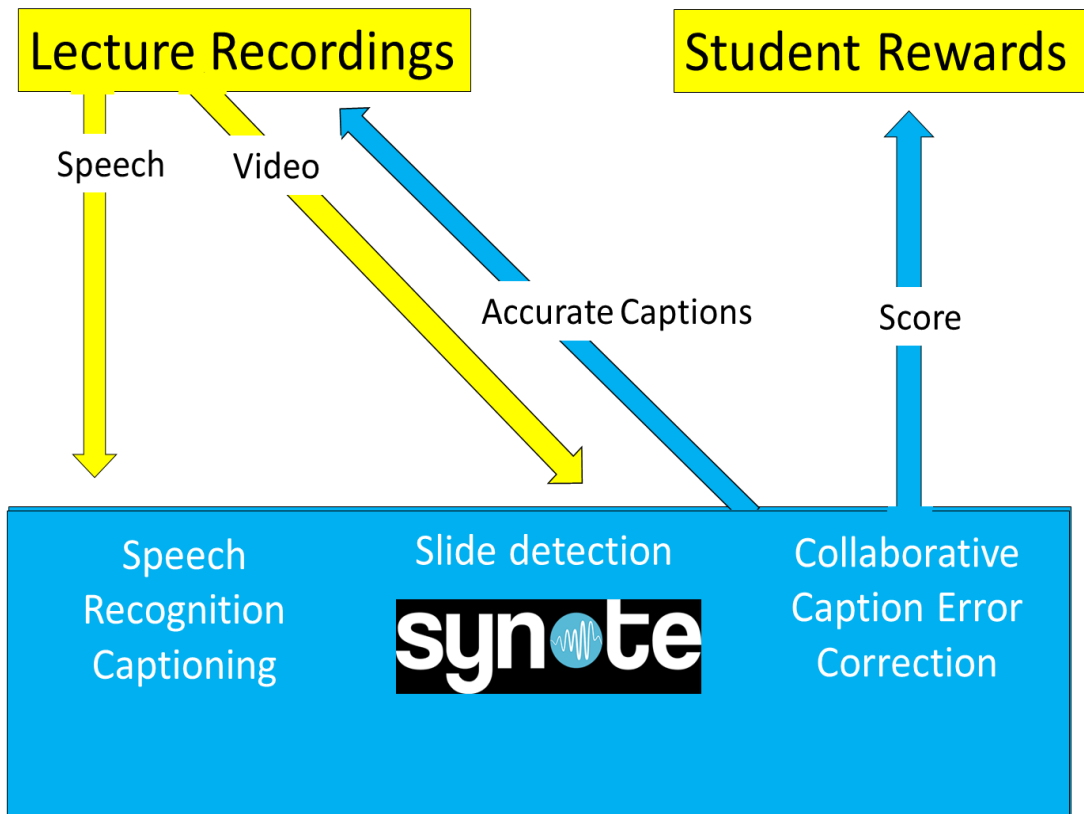
Figures 2, 3 and 4 are screen captures of Synote screens that show some of the features.

Figure 2 shows the caption edit button with the caption shown underneath, the button to show the shortcut key list to speed up correction, the searchable transcript, the button to add a clip to the playlist, the synchronised notes and bookmarks that can be created and searched and filtered. Any section of a recording can be bookmarked to create a replayable clip and a playlist can replay selected clips in any order. This for example allows a student to create a revision playlist for all their lectures in a course.

Figure 3 shows the print friendly selection button option, the next or previous caption selection button to help speed up editing and the button to add bookmarks with notes and tags.

Figure 4 shows the print friendly low bandwidth mobile friendly option which replays only the audio with time synchronised video images, transcript and bookmarks with notes and tags which can be selected to copy to the clipboard for printing or pasting into a word processor. A QR code is shown under each image and when you print everything out you can look at all the notes anywhere and if you want to listen back to something or watch the video you can use your mobile phone QR code reader to scan the QR code and Synote will go to that precise point in the recording and play that video and the audio back on your phone.

Figure 2. Synote screen capture showing some features of video replay and caption editing.
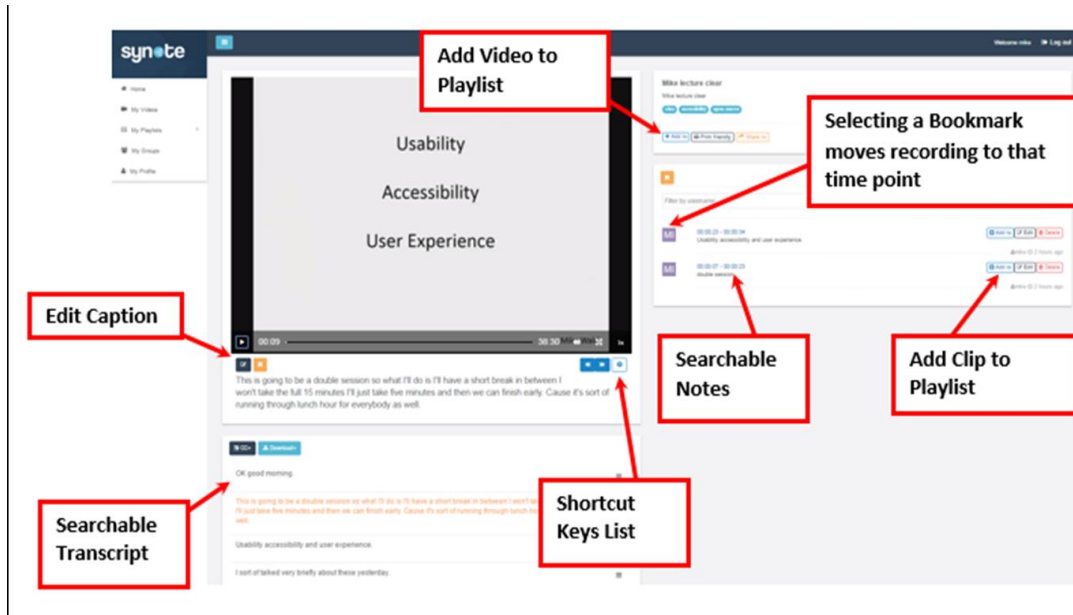
Figure 3. Synote screen capture showing some more features of video replay and caption editing.
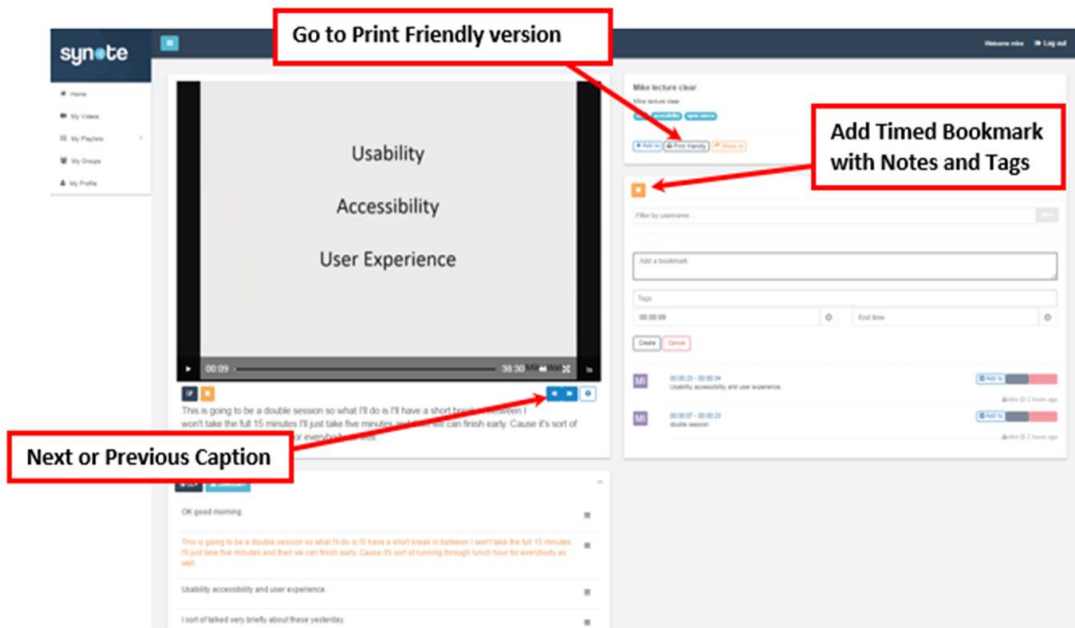
Figure 4. Synote screen capture showing Print Friendly option.
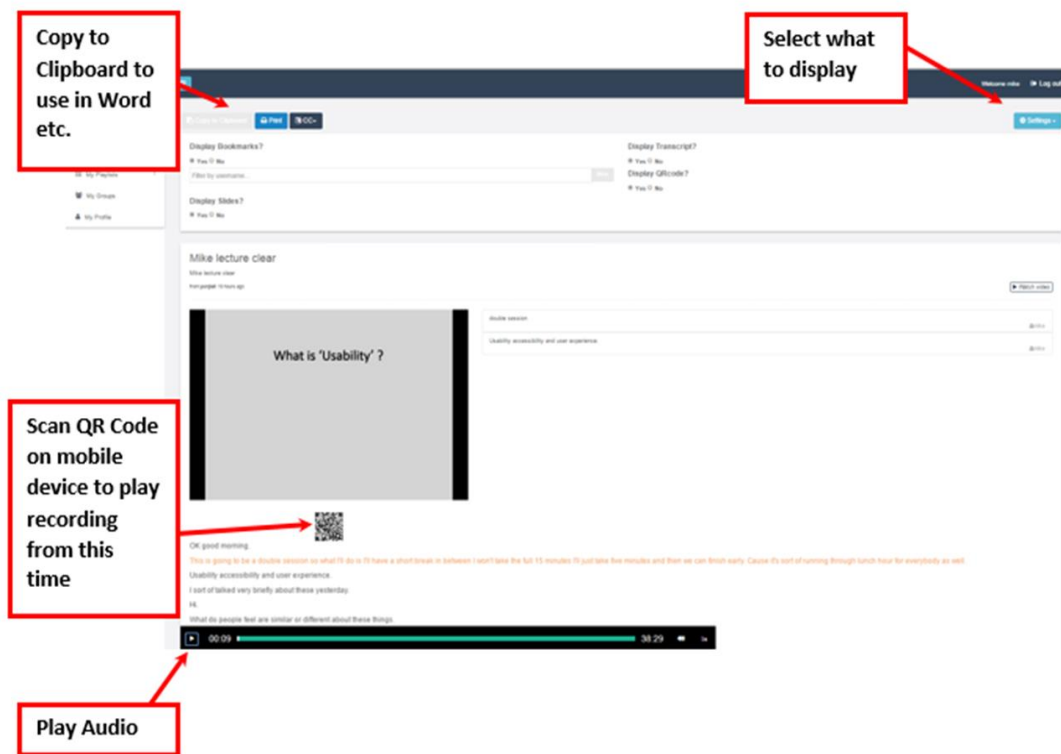
While speech recognition, caption editing and annotation may be available in some other systems, they do not offer all the above benefits and features specifically designed for disabled students. While small scale trials have been undertaken using collaborative editing conclusive evidence awaits future larger scale research trials.

Learning from a lecture recording without annotations and captions is rather like trying to learn from a text book that has not got any contents, index, page numbers, chapter or section headings, and does not allow you to add annotation, notes or bookmarks: which is not like a useful textbook but more like a story book. Similarly, a lecture recording with no captions, transcript, chapter or section headings or annotation, notes or bookmarks doesn't allow you to search and interact with the recording and so would appear to encourage students go into 'movie mode' wanting to be entertained along with coca cola and popcorn!

Flexible ways and benefits of taking notes with a speech recognition captioning/transcription system such as Synote that allows collaborative editing and annotation include:

- No need to write down what is said during the live lecture because you know that all the information will be available.
- Search transcript and pause and rewind recording when replaying the recording.
- Make brief personal digital notes on a mobile device during the live lecture and copy into Synote.
- Make personal digital notes on Synote when replaying the recording
- Copy the digital transcript, slides, notes into a word processor
- Print and paste/staple digital transcript, slides, notes into Synote print out
- Flexible paper notes which supports diagrams can be pasted or stapled into the Synote print out which can be edited on paper and/or scanned and pasted into Synote
- The recording can be replayed using the Synote print friendly QR time stamped codes and listened to or watched on a mobile device

4. Conclusion

Speech recognition captioning with collaborative editing could provide affordable transcription and captioning of lecture recordings and so support inclusive learning and help universities comply with equality legislation while also having the potential to improve retention & recruitment.

References

Catchbox (2017) [online] Available at: http://getcatchbox.com/ [Accessed 18 Oct. 2017]

Crowdmics (2017) [online] Available at: http://crowdmics.com/ [Accessed 18 Oct. 2017]

Disability Rights UK Factsheet F56 (2017) [online] Available at: https://www.disabilityrightsuk.org/understanding-equality-act-information-disabled-students [Accessed 18 Oct. 2017]

Johnson, J. (2015). *Disabled Students' Allowances: Written statement - HCWS347* [online] Available at: http://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2015-12-02/HCWS347 [Accessed 18 Oct. 2017]

Layer, G. (2017) Inclusive Teaching and Learning in Higher Education as a route to Excellence [online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/587221/Inclusive_Teaching_and_Learning_in_Higher_Education_as_a_route_to-excellence.pdf [Accessed 18 Oct. 2017]

Lewin, T. (2015) Harvard and M.I.T. Are Sued Over Lack of Closed Captions [online] Available at: https://www.nytimes.com/2015/02/13/education/harvard-and-mit-sued-over-failing-to-caption-online-courses.html [Accessed 18 Oct. 2017]

National Association of the Deaf v. Netflix (2012) [online] Available at: https://dredf.org/captioning/ [Accessed 18 Oct. 2017]

Supporting disabled students (2017) [online] Available at: http://www.hefce.ac.uk/sas/disabled/inclusive/ [Accessed 18 Oct. 2017]

Synote (2017) [online] Available at: http://synote.com/ [Accessed 18 Oct. 2017]

TED's Open Translation Project (2009) [online] Available at: http://blog.ted.com/ted_open_trans/ [Accessed 18 Oct. 2017]

Wald, M (2012) Important new enhancements to inclusive learning using recorded lectures at 13th International Conference on Computers Helping People with Special Needs (ICCHP 2012), Austria. 11 - 13 Jul 2012. 8 pp.

Wald, M (2013) Concurrent Collaborative Captioning. Proceedings of SERP'13 - The 2013 International Conference on Software Engineering Research and Practice

Wald, M (2017) Business Models for Captioning University Lecture Recordings. Journal of Management Science Surrathani Rajabhat University

Whitney, L. (2011) Netflix sued by deaf group over lack of subtitles [online] Available at: https://www.cnet.com/uk/news/netflix-sued-by-deaf-group-over-lack-of-subtitles/ [Accessed 18 Oct. 2017]

Xiong, W., Droppo, J., Huang, X., Seide, F., Seltzer, M., Stolcke, A., Yu, D., Zweig, G. (2017) Achieving Human Parity in Conversational Speech Recognition: Microsoft Research Technical Report MSR-TR-2016-71 February 2017

A COMPARATIVE STUDY OF ONLINE AND TRADITIONAL FORMATS FOR LANGUAGE, LITERACY AND CULTURE

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Abstract

Online and blended coursework continues to be at the forefront of trends in education. The economic impact of online education is significant and dramatically contributes to institutions of higher education. Teacher educators of English Language Learners (ELLs) also express interest in face-to-face traditional classrooms with discussion and active learning in an engaged classroom setting. Numerous traditional programs and online opportunities support teaching of ELLs reinforcing self-directed learning strategies. The pedagogical potential to enhance teaching and learning for linguistically diverse students is central to the goals and objectives of course design and implementation.

This study will compare two groups of graduate level teacher educators enrolled in the same Language, Literacy and Culture course. This course is required to obtain a teaching endorsement in Bilingual Education or English as a New Language in the State of Idaho, USA. Group A will participate in an asynchronous completely online platform utilizing Blackboard software. Group B will be enrolled in a traditional face-to-face setting that meets in a weekend format. The graduate students are self-selected by enrollment choice and cannot be randomized. The course assignments and requirements will be similar for each group of students. The intent is to focus on three domains impacting this side-by-side comparison. These include the ability to establish and maintain informal communication among the students and professor, the impact of spoken verbal components, and the differences in assessment levels. Specific aspects will be analyzed including the question and response components between the two groups and the types and level of participation in peer group settings. Although online blogs and discussions can be monitored, how does this compare with the face-to-face group of students? Clearly, this study will be impacted by the comparison points identified. Although similar assignments and assessment tools are incorporated, observation of interaction between students in peer group settings will be impacted. This study will include a discussion of the design, content, and implementation techniques for online and face-to-face course development and delivery, as well as student performance and outcomes on assignments. It is crucial to leverage exemplary pedagogy, capturing and sharing cutting-edge experiences that lead to quality courses and student success in language acquisition.

Keywords: Online, face-to-face, comparative study, pedagogy, language acquisition.

1. Description of online and face-to-face programs

Academic discussions are often dominated by debates over online and face-to-face coursework. Numerous reasons exist that favor one form of learning over another. For the purpose of this study, the graduate course titled Culturally Diverse Learners is described as follows:

Through the use of ethnographic tools, students will gain a better understanding of cultural and linguistic issues in their schools, and local and global communities. In this course, students investigate the ways social structuring, cultural assumptions and language bear on student and family participation in such areas as the classroom, government, social service agencies, business and industry.

The course is designed to develop a broader understanding of cultural diversity and deepen students' knowledge base of culturally diverse populations. During the course, students address critical perspectives supporting culturally diverse students, and will engage in discussions that challenge the understanding of persons from ethno-linguistically and culturally diverse backgrounds. Students also investigate issues that focus on multicultural and bilingual education, as well as creating a more socially just society.

Due to the pluralistic nature and ever-changing demographics of this nation, teachers need to become familiar with the meaning and significance of diversity. Through reading, writing, film, teacher/student discussions, and experiential activities, participants will have ample opportunities to reflect on race, gender, abilities, sexuality, social class, social justice, human ecology, and cultural proficiency.

The goal of this course is to help educators make the world a better place. In order to reach that goal, students focus on two major themes: 1) Self-Awareness/Cultural Competency 2) Other-Awareness/Empathy. In the process, they explore a variety of worldviews as well as approaches to teaching and learning.

Students enrolled in the face-to face section of the course will meet over three weekends in a traditional classroom setting. Students enrolled in the online sections of the course meet weekly completing 15 modules on Blackboard software. Students may access digital articles and videos directly from the source or through the library. The eCampus Center provides a number of services and resources to help online students succeed. For students new to Blackboard, resources are provided to assist students using Blackboard in order to complete their work in the course. Students are also required to have a number of computer skills and resources to take this class. They must ensure that their computers are ready, and that they meet the minimum computer hardware and software requirements, including Internet connection and web browsers.

2. Review of the literature

Traditional coursework that is teacher-centered has been the norm in colleges and universities for centuries. With the evolution of technology, students are interested in learning new ways to communicate and engage in learning. Online communication that emphasizes language learning and teaching has been shown by educators and researchers to positively impact learning and strengthen cognitive presence (Lamy, M. & Hampel, R., 2007). Conversely, a study revealed that, "students preferred direct instruction if they expected a course to be difficult, singling out math and science, according to the study released by the Community College Research Center at Columbia University's Teachers College" (Rivera, C., 2013). In further discussion, a student who favored traditional classroom settings commented, "To supplement my school's curriculum, I turned to a Stanford program offering online courses to gifted youth. I started the program with enthusiasm, but I soon felt alone and unsupported. I had no one to impress or disappoint. I struggled to stay motivated. It was impersonal and transactional, and it nearly destroyed my obsession. A face-to-face meeting in a classroom imposes accountability, inspires effort and promotes academic responsibility in subtle ways that we don't fully appreciate." (Chandler, A., 2012). In both online and traditional settings student engagement is essential and is the goal. Ongoing research has concluded that student engagement is a key predictor of student success (Pascarella, E. & Terenzini, P., 2005). It is imperative that students engage and interact with each other as well as with the instructor.

Communication and student engagement are central to the goals of both the online and traditional face-to-face sections of the Language, Literacy and Culture graduate course. Prior to the beginning of each course in this study, welcome messages are sent to each student followed up by announcements designed to encourage and inform students. This will set the stage for active participation and communication. During the first module of each online course, I design an introductory exercise and ask students to post a photo and share a "My Story" piece with other students. Students enrolled in the face-to-face course are asked to introduce themselves to the class during their initial meeting and share information regarding their career including experience working with culturally diverse students. Another key component to the course is reflection and peer feedback. There is an understanding among researchers and practitioners regarding the importance of this aspect of learning, and that it is essential in bridging the gap between knowledge and practice (McLeskey and Waldron, 2004).

3. Methodology

The objectives for the Culturally Diverse Learners course are as follows:
- Recognize the inter-relatedness of language, culture and schooling
- Discuss and provide examples about the pre-conditions for equitable and democratic language practices in classrooms and communities
- Examine and evaluate educational policies and practices (including his/her own) in relation to language, culture and schooling
- Analyze relevant research in terms of its implications for effective educational policies and practices in schools and in the community

- Understand his/her own teaching and/or behavior as social, cultural, and political practices with possibilities for transformative action through an understanding of culturally responsive pedagogy
- Recognize and advocate for the importance and benefits of family and community involvement in the academic, social and linguistic success of students

In order to accomplish these objectives and be successful, graduate students will complete a variety of activities. In the face-to-face course, students are able to participate in field trips and guest speakers are brought to the class. Discussions among students take place relating to the readings and media. Students present unit plans to their collegues and teach a lesson for the class. During the online courses, fifteen weekly modules are designed for students to follow that include readings and media, online discussion groups, reflection papers, and journal entries. The major project for both groups is a Child and Comunity Context Study that involves getting to know the neighborhood of the school, interviewing community members, following specific students, and finally making a home visit and interviewing students' families.

This study compared two groups of graduate level teacher educators enrolled in the same Language, Literacy and Culture course. One group participated in the fully online course and the other group was enrolled in the face-to-face course that met over three weekeds, one wekend per month. The two groups are compared based on course requirements nad pedagogy, interaction, teacher presence, assessment and student evaluations.

4. Teacher presence

It is imperative to develop strong teacher presence in both the traditional face-to-face setting and the online course. Teaching presence is identified by Anderson, Garrison et. al. in terms of instructor overt facilitation and is addressed as a significant instructional theme for online learning. The model of critical thinking and practical inquiry is employed to constitutively define the concept of teaching presence and address it in three categories-design and organization, facilitating discourse, and direct instruction (Anderson, T. et. al., 2001). Expert teaching presence is essential in both face-to-face and online instruction to transform the learning experience from routine to excellent. In the case of English Language Learners (ELLs), it is crucial to be in an environment that is orchestrated with a simulated and student-centered teaching presence focusing on active and collaborative learning. Because traditional face-to-face learning incorporates the physical presence of the instructor, asynchronous online teaching demands considerable effort to establish a teaching presence and educational relationship with the instructor and among students.

5. Interaction

The interaction in the face-to-face group and with the online students was significantly varied and diverse. The face-to-face students were able to work together on small group activities and have open-ended discussions that led to immediate feedback and candid conversation. Due to the nature of the weekend course, and the fact that they spent the entire day together, they were able to scaffold activities and build on each other's work and understanding of the readings, videos and lessons presented.

On the other hand, the asynchronous online students realized a waiting period and more time for thoughtful comments and feedback on each other's work. Discussion boards and posts were relied upon to provide insight and thoughtful comments. It was a requirement for online students to post work and for students to comment on at least three other student's journals or reflections. The final project of a Student Community Context study was a major requirement for both groups and required class discussion and feedback for the face-to face group and online posting and responses for the online class.

6. Assessment and grades

Rubrics and a grading scale were clearly posted on the syllabus for each class. Students knew at the onset of each assignment the expectations for earning the point value assigned. The objectives for each assignment were also made clear and assignments were tied to specific standards required. A grading scale was posted in the syllabus so that students knew from the beginning of the course the number of points required for each letter grade. Most of the students in each setting earned an A grade. Two students in the online course fell behind and struggled because they did not keep up with the weekly assignments. One student in the face-to-face course had difficulty completing assignments when they were due. Although specific dates were required for each activity, I did try to be supportive and assist

students who met challenges or difficult situations with additional time. Participation was a part of the grade for the students who met in the face-to-face setting on the weekends. They were expected to be present for all three sessions. One student missed one of the sessions and completed additional work to make up the missing time, although this was still a challenge.

7. Student course evaluations

The student course evaluations revealed interesting data and comments. There was a 90% response rate from the online students, yet only a 52% response rate from students in the face-to-face course. Points were given for the online students to complete the evaluation, and this was incorporated into the Blackboard platform. It was difficult to award points to the face-to-face students and monitor their completion of the evaluations at the end of the course. The discrepancy is clearly evident based on rewarding online students with points and merely asking repeatedly that face-to-face students please remember to complete the evaluation. I will address the two specific areas of feedback on the course itself and the instructor rating. Students enrolled in the online course had specific questions linked to the Blackboard format and online learning. Each group of students was given the opportunity to provide comments and some of the more valuable comments will be shared.

On a Likert scale of 1-5, with 1 being the lowest and 5 being the highest, students in the face-to-face course responded with a 4.4 on the question of, "Tell us about the course." The students in the online course responded with 4.75. In response to the question of overall instructor rating, the students in the face-to-face course responded with 4.4 on the Likert scale while online students responded with 4.75.

In the section of the evaluation that allowed for student comments, the face-to-face class responded with comments that the, "field trips added value to cultural awareness," the "guest speakers, home visits, and textbook" were beneficial. The majority of positive comments related to guest speakers which were not included in the online course. One student wrote, "I found the guest speakers to be the most valuable source of information in this course since they were speaking from their own perspective based upon their own experiences coming to a new country and assimilating to our culture and educational system." Other students commented that giving and listening to other students' lesson and chapter presentations provided insight and learning opportunities.

It is interesting to note that students in the online course commented that "the lessons progressed in a logical manner and built up to the final project." This project was the Child and Community Context Study and numerous positive comments were made about the benefits of this activity and how it would impact teaching throughout their career. Students highlighted the way that the course was arranged through weekly modules and assignments that were scaffolded and could be easily navigated. Online students appreciated the readings and writings and recognized "their own cultural biases and the opportunity to discover a deeper understanding for their students and cultures."

Online students pointed out that what they liked least was not getting to know the instructor and a lack of human contact. They would have preferred more feedback and instructor involvement in discussions. They appreciated the quick response time to their questions but commented that it was more difficult to take courses online because they were not working directly with other students. Finally, online students described further barriers to learning as dealing with the Blackboard software, doing busy work, or being challenged meeting weekly assignment deadlines. However, these challenges appeared to be off set by the ability to work asynchronously online and manage their own time. The convenience of not having to travel a considerable distance to campus was also a tremendous asset for online students.

8. Conclusion

The teaching of English Language learners is supported by numerous traditional and online programs. Online and traditional opportunities reinforce self-directed learning strategies. Exemplary pedagogy, capturing and sharing cutting-edge experiences that lead to quality courses and student success are tantamount to both traditional and online teaching.

Comparing two groups of graduate level teacher educators enrolled in the same Language, Literacy and Culture course, one group online and the other in a traditional setting, revealed both positive and negative outcomes to each course format. The asynchronous completely online platform utilizing Blackboard software expressed positive outcomes relating to the modules and scaffolding format, as well as the weekly organization of coursework. Students enrolled in a traditional face-to-face setting that met in a weekend format appreciate the face-to-face interaction, and the opportunity for field trips and guest speakers that was not possible for the online students. While the design, content, and implementation techniques for online course development and delivery were well organized, something seemed to be

missing without the human contact. Further work and investigation is needed to address critical issues and practices for ELLs and educators of ELL students, including strategies for aligning course content and online platforms. Educators must continue to develop multi-dimensional technologies to address the specific needs of these students. Utilizing state of the art technology and coursework, while incorporating outstanding resources and methods to reach educators and students will ensure a higher level of confidence and enhance teaching and learning.

References

Anderson, T., Liam, R. Garrison, D., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. Journal of Asynchronous Learning Networks. Vol. 5 (2).

Chandler, A. (2012). Learning in classrooms versus online.*The New York Times*. http://www.nytimes.com/2012/07/26/opinion/learning-in-classrooms-versus-online.html Retrieved January 2, 2018.

Lamy, M. & Hampel, R. (2007). *Online Communication in Language Learning and Teaching*. Palgrave, New York, Macmillan.

McLeskey, J. & Waldron, N., (2004). Three conceptions of teacher learning: Exploring the relationship between knowledge and the practice of teaching. *Teacher Education and Special Education*, 27, 3-14.

Pascarella, E. & Terenzini, P. (2005). *How College Affects Students.* Vol 2 A Third Decade of Research. San Francisco, CA, Jossey-Bass.

Rivera, C. (2013) Study says many online students prefer face-to-face classes. *Los Angeles Times*. http://articles.latimes.com/2013/apr/25/local/la-me-ln-study-online-20130425 Retrieved January 2, 2018.

THE EXPANSIVE LEARNING THEORY AT THE SERVICE OF PARENT-TEACHER COLLABORATION

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Abstract

A plethora of studies link parent-teacher collaboration to children's learning and persistence in school. To be collaborative, the relationships between parents and teachers must meet the information, support and training needs of families so as to promote parental involvement as well as take into account their socioeconomic differences. The relationships can be very complex especially in the context of learning assessment practices. Since the implementation of the competency-based Quebec Education Program back in 2001, confusion persists with many parents. With the intention of gaining deeper understanding of the challenges parents and teachers face, we propose to revisit our most relevant study findings. This article seeks to show the value of Theory of Expansive Learning grounded in the Cultural-Historical Activity Theory (CHAT) (Engeström, 2007) that focuses on new forms of learning and social practices. Contradictions are identified and analyzed in the two interacting activity systems, the parents' and the teachers'. They provide a stimulus in helping us to reframe our representation and to guide us in the transformation process that then requires boundary-crossing actions. The Change Laboratory Method is thus introduced as a means that involves the intervention research team and stakeholders active in the problem co-modeling solution process. We hypothesize a two activity systems cross-boundary model in modeling a new solution. Sharing a common object like improving teacher parent collaboration is key to break away and overcome the tensions to cross boundaries together and achieve the targeted outcome ie student's success.

Keywords: *Expansive learning theory, cultural-historical activity theory (CHAT), parent-teacher collaboration, learning assessment, change laboratory method.*

1. Introduction

A huge existing body of research at the national and international levels have put into light the importance of parent-teacher collaboration to support children's learning (e.g., Epstein, 2011; Henderson et al., 2009) and resilience among at-risk students (Deslandes & Barma, 2017). Parent-teacher collaboration refers to family responsibilities and the role of the school in updating parents' participation in school monitoring. This collaboration develops in the presence of shared responsibilities, mutual trust and open communication between the partners. In a collaborative school-family relationship perspective, Christenson and Sheridan (2001) recommend focusing on four aspects: 1) an approach that places importance on the roles of key actors, 2) positive attitudes toward change, 3) a welcoming and respectful atmosphere, and 4) actions that are actualized by facilitating activities . For school-family relationships to be collaborative, they must meet the information, support and training needs of families so as to promote parental involvement as well as take into account their socio-economic and social differences (Deslandes, 2012; Grant & Ray 2013; Jeynes, 2005). Positive parent-teacher relationships thus act as mechanisms that can promote the educational success.

As we know, these relationships can be very complex (Deslandes, Barma & Morin, 2015) even more so in the context of learning assessment practices (Deslandes & Barma, 2017). The implementation of the competency-based Quebec Education Program back in 2001 called for new ways of learning and consequently new ways of evaluating that differed from what many parents are familiar with (Dodd, 1998). As a result, many parents complained having difficulty to understand the information on the evaluation sheets and on the report cards because it was too complex (Kay et al., 1997; Martinez et al., 2004). It is then that the first author invited some colleagues to join her in conducting a research program supported by a SSHRC grant (Deslandes, 2007-2011) and aiming at: 1) identifying parents' needs in

relation to learning assessments and 2) piloting tools or workshops for parents. Despite that work, learning assessment practices remain an actual concern as stated in the Quebec (Canada) Ministry of Education's policy orientations to improve students' academic achievement: Orientation 4.3: *Updating the methods for evaluating learning and ensuring their integrity* (June 2017). Indeed, as reported in the medias, teachers deplore the fact that evaluation is not at the service of learning but rather at the service of results-based management and parents still complain that they don't understand the evaluation issues. With the intention of gaining deeper understanding of the challenges parents and teachers face in their relationships regarding learning assessment, we propose to revisit our most salient previous research findings. In this paper, we adopt the Theory of Expansive Learning grounded in Vygotstky's, Davydov's and Engeström's work to identify more efficient and efficacious ways for parents and teachers working together.

2. Theoretical perspectives and method

Our analysis draws on a paradigm that roots collaboration between parents and teachers in two activity systems in interaction that can possibly go through collective transformations and towards new ways of working together (Engeström, 2001, 2015). Hence the relevancy of referring to the Theory of Expansive Learning that posits actors through transformative actions as they share a common object and are learning something that is not known or understood ahead of time (Engeström, 2015). This process is grounded in Cultural-Historical Activity Theory (CHAT) (Engeström, 2007), a theoretical framework whose unit of analysis is always two activity systems in interaction. CHAT uses a triangular representation of individual/social mediation that has six interconnected elements or poles: subjects, object-oriented, tools, community, rules and division of labor (Engeström, 1987). In any system of human activity, the subject who acts within a community is organized by rules and the division of labor and he/she utilizes artifacts or tools to accomplish, with others, the object of collective activity. Two key concepts, *contradictions* and *boundary-crossing* are at the heart of this transformative cycle. Inevitably, the actors experiment tensions in the course of actions. If recurrent, tensions may become conflicts important enough that they develop in inner contradictions in unveiled and resolved contradictions can become a driving force for transforming activities that leads to expansive learning (Engeström, 2015). They usually arise from the *rules* established in their respective *communities*, which often require a clarification of roles and influence the *division of labor*. In his Theory of Expansive Learning, Engeström builds from the work of Davydov (2008) and conceptualizes four types of contradictions (i.e., primary, secondary, tertiary and quaternary), all in the context of an expansion cycle of learning. In this contribution, we focus on the first three levels. The first level of contradiction is situated at each pole of an activity system when opposing forces are identified. The second level of contradiction is located between different poles when participants start addressing an identified problem to resolve it. The third one is when the object of the dominant form of the central activity and the object of a more advanced form of the central activity. It may be necessary to *cross the boundaries* for example in this case, between the parents' activity system and the teachers' where teachers move across to get information, and to think of new tools. It also becomes relevant to examine on how boundaries are crossed as resilient mediators act to decrease the tensions arising as different activity systems interact (Edwards & Apostolov, 2007). The Theory of Expansive Learning is particularly useful to illustrate the activity systems in interaction and to better articulate the transformation process that requires boundary-crossing actions (Engeström, 2015).

Figure 1. Model of two activity systems in interaction (Engeström, 2006).
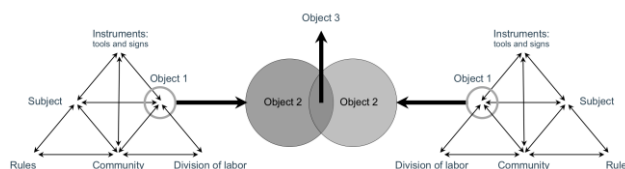
In the current paper, we first present the most notable results of our previously conducted studies. Using the Expansive Learning Theory, we illustrate the possible boundary-crossing actions that we hypothesize. To do so, the Change Laboratory Method is introduced as a means to foster expansive learning actions for a new form of activity (Virkkunen & Newnham, 2013). Typically, the Change Laboratory method comprises six phases: 1) questioning and criticizing the actual practice; 2) analyzing the situation; 3) modeling the new solution; 4) examining and testing the model; 5) implementing the model and 6) reflecting and consolidating. The present work corresponds to the first phase, that is the

questioning one (Virkkunen & Newnham, 2013). Contradictions will be identified, analyzed and depicted in each triangular model. Past studies will serve as "mirror data" and thus provide a stimulus in helping us to reframe our representation and to guide us in identifying and prioritization new patterns of activity.

3. Research questions, objectives and originality

Through the analysis of our prior study results, and as potential transformative agents, we ask ourselves the following questions: 1) How would we make sense of the findings and of the tools and actions that were put forward? 2) What avenues could we provide as new actions and as solutions to the parent-teacher collaboration with respect to learning assessment practices issue challenges? The objectives of this paper are thus (1) to identify the tensions and contradictions that emerged in our previous works, and (2) to propose a two activity systems cross-boundary model in providing a new solution to the current problem. This approach is original and innovative in comparison with others in that it adopts the Expansive learning Theory as an analytic angle to resolve a conflictual situation and in depicting new ways to improve parent-teacher collaboration with respect to learning assessment practices issue challenges. Past studies will serve as "mirror data" and thus provide a stimulus in helping us as interventionists researchers to guide the participants in imagining new forms of actions to transform the nature of the collaboration between parents and teachers with regards to learning assessment practices. We hypothesize a possible boundary crossing zone of proximal development of two-activity systems in modeling a new space for constructive dialog in the context of learning assessment.

4. Main findings and discussion

A first study (2007-2008) using a quantitative approach was conducted with 125 parents of elementary school children on their needs regarding students' learning assessments, that is, parents' understanding of the teachers' practices and of their role in monitoring their children's progress in school. This study was based on Hoover-Dempsey et al.'s (2005) theoretical model of the parental involvement process that includes parents' motivational beliefs, that is, parental role construction, parents' beliefs about the teachers' role and parents' self-efficacy. Nearly 50% of respondents reported not knowing, and not understanding the methods used by teachers to assess student learning. Over 80% of parents wanted the teacher to discuss with them the activities evaluated in the classroom (Deslandes et al., 2009). A second study (2008-2009) examined parents' needs through the educators' perceptions of parents' motivational beliefs. That study used a qualitative approach based on three focus groups conducted with educators (n = 27) working in two low SES primary schools. Educators said they expected parents to understand the nature of the child's difficulties and to have a global vision of the learning process. Teachers felt that most parents living in low SES neighborhoods do not seem to understand the changes in the assessment methods and some questioned the willingness of parents to obtain relevant information and energy, and a negative perception of school (Deslandes & Rivard, 2011a). The third study's (2009-2010) objectives were to develop and pilot some tools for parents. School teachers from the above-cited low SES school favored the development of simple tools such as leaflets. The process was based on the framework of Epstein's type 1 (parenting) of parental involvement, and type 4 (learning at home) that aimed at giving information to parents and helping them to develop their skills on how to monitor academic progress (Epstein, 2011). A total of 13 parents completed the evaluation questionnaire on a voluntary basis, and six of them joined a discussion group. All of the participants said that they now understand the difference between "knowledge" and "competency." However, they wanted to know more about grades, whether they come from evaluations or classroom observations. (Deslandes & Rivard, 2011b). In the fourth piece of work (2010-2011), we presented two case studies using the experiential learning approach and conducted with parents of kindergarten and 6th grade students. In general, the parents who participated as active learners reported more knowledge and understanding related to school assessment practices. They also felt more equipped for interacting with their children to monitor academic progress. However, only about half of parents responded positively to the teacher's invitation at the kindergarten level, and only 11% of parents did at the grade six level. According to the participating parents, the invitation letters should avoid terminology with depreciative connotation like the words workshop and evaluation. During discussions, some have indicated that they relied on teachers when it came to evaluation of learning. Their concerns were more associated with monitoring homework (Deslandes & Rivard, 2013). The following section presents how we make sense of these findings using expansive learning theory.

4.1. Parents' activity system: (parents' perspective)

In the parents' activity system, primary and secondary contradictions are being observed, (e.g. see Figure 2). The first level is situated at each pole of the activity system and the second level between the poles. Even though there is consensus regarding the object which is to improve the parent-teacher collaboration in view of better school success (*outcome)*, there seems to be opposition between parents' will to be involved in monitoring child's progress (*rules* pole) and their reported misunderstanding of the report cards and the evaluation sheets (*tools* pole). Likewise, parents request more information on grades and classroom observations learning assessment (*rules* pole) as opposed to low involvement in the discussion groups (*division of labor* pole). Parents want to understand the assessment practices whereas the report cards and the sheets vs having access to simple language material (*tools* pole). Likewise, some parents wanted to know more about the grades and classroom observations used in the assessment practices vs parents' perceived teachers' sole expertise in learning assessment (*division of labor* pole).

4.2. Teachers' activity system (teachers' perspective)

In this activity system, contradictions appear also at the *rules*, the *tools* and the *division of labor* poles. Teachers employ hermetic terminology in their invitation letters versus the use of neutral terms (*tool* pole). On one hand, teachers expect parents to understand the assessment practices and on the other hand, they question their interest, their availability and their will to obtain formation (*rule* tools). Likewise, teachers expect parents to be involved in the supervision of their child's school work whereas some teachers assume parents to have a global vision of the learning process which exceeds what is normally awaited (*division of labor* pole). Whether according to parents 'or teachers' perceptions, our studies have put into light some ambiguities and tensions in the rules and responsibilities of the parents with respect to their involvement and on some of the expected characteristics of the communication tools as regards to the learning assessment context. In the light of Expansive Learning Theory, parents and teachers must develop a common vision of the nature of collaboration (object) in the learning evaluation context. We propose the Change Laboratory methodology as an instrument producing activity system to enhance collaboration.

There seems to be issues of trust building and communicating between parents and teachers. Are parents supposed to be collaborators or « watchdogs »? What do parents need to know about learning assessment in order to supervise their child's work? To what extent do teachers would like to share their knowledge and their practices with respect to assessment? Do parents prefer to leave the assessment field in the hands of the teachers?

Figure 2. Parents' and teachers' activity systems interacting for collaboration enhancement in the context of learning assessment practices.
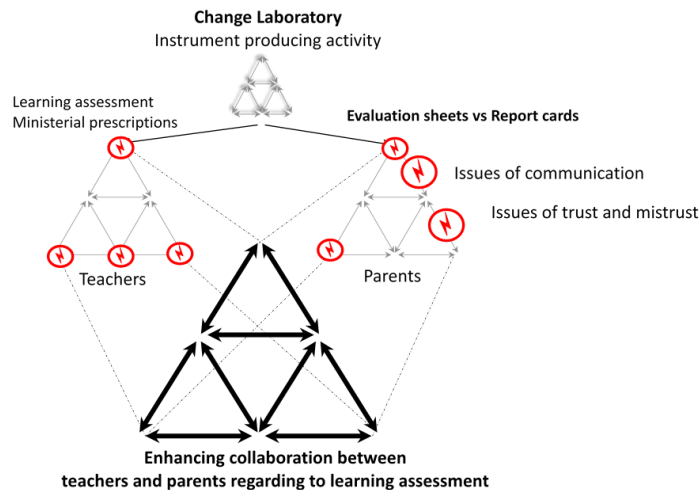
5. Conclusions: Breaking away to crossing boundaries together

The implementation of the competency-based Quebec Education Program back in 2001 called for new ways of learning and consequently new ways of evaluating that differed from what many parents are familiar with and also challenged the teachers' assessment practices. We consider that there is still a

good amount of paralysis and unclear motivations and perceptions with regards to the learning assessment ministerial policies. In our imagining activity, we envision an alternative concrete plan of actions relative to get the present mode of practice evolving (Virkkunen & Ahonen, 2011). Expansive Learning Theory grounded in CHAT focuses on new forms of learning and social practices that develop beyond the activity of isolated individuals. A typical Change Laboratory session gathers together various participants and invites them to come to a joint representation of the problem they are facing and also a co-modelling of a new activity. Participants question and position themselves to move in a specific direction. At the frontiers and across the boundaries of their respective activity system, teachers and parents will be invited to bring their own resources and expertise for the benefit of a better collaboration and cooperation. The main findings presented will be reinvested as mirror data to engage the discussions between teachers and parents. Sharing a common object like improving teacher parent collaboration is key to break away and overcome the tensions to cross boundaries together and achieve the targeted outcome i.e. student's success.

References

Barma, **S**., Laferrière, T., Lemieux, B., Massé-Morneau, J., & Vincent, M.-C. (2017). Early stages in building hybrid activity between school and work: the case of PénArt. *Journal of Education and Work, 30*(6), 669-687. doi:10.1080/13639080.2017.1294247

Christenson, S. L. & Sheridan, S. M. (2001). *Schools and families: creating essential connections for learning*. New-York, N.Y.: The Guilford Press.

Deslandes, R. (2012). A model of human development at the service of the educational success of youth: Toward an integrated model of the factors and processes of school-family collaboration . *Human Development, Disability and Social Change Journal* 20(3), 77-92.

Deslandes, R., Barma, S., & Morin, L. (2015). Understanding complex relationships between teachers and parents. *International Journal about Parents in Education 9*(1), 131-144.

Deslandes, R, & Rivard, M.-C. (2011a). Perceptions d'éducateurs à l'égard de parents en matière d'évaluation des apprentissages au primaire [Perceptions of educators with respect to parents in the assessment of learning at the elementary level]. *Éducation et Francophonie XXXIX*(1), 133-156.

Deslandes, R., & Rivard, M.-C. (2011b). Testing of a tool for parents to popularize and clarify the evaluation process of student learning in disadvantaged areas. *Revue N'autre école*, *30*, 36-37.

Deslandes, R. et Rivard, M.-C. (2013). A Pilot Study Aiming to Promote Parents' Understanding of Learning Assessment at the Elementary Level. *The School Community Journal 23* (2), 9-31

Deslandes, R., Rivard, M.-C., Joyal, F., Trudeau, F, & Laurencelle, L. (2010). *Perceptions of the Impacts of the Arts du Cirque Program: A Case Study*. ERIC database (ED510304).

Dodd, A. W. (1998). What can educators learn from parents who oppose curricular and classroom practices? *Journal of Curriculum Studies*, *30*(4), 461-477.

Edwards, A., & Apostolov, A. (2007). A cultural-historical interpretation of resilience: the implications for practice. *Critical Social Studies (1),* 70-84.

Engeström, Y. (2001). Expansive learning at work: toward an activity-theoretical reconceptualization. *Journal of Education and Work, 14* (1), 133-156.

Engeström, Y. (2006). Activity theory and expansive design. *Theories and practice of interaction design*, 3-23.

Engeström, Y. (2015). Learning by expanding (2nd edition): An activity-theoretical approach to developmental research. Cambridge University Press.

Epstein, J. L. (2011). *School, family, and community partnerships: Preparing educators and improving schools,* Boulder, Colorado: Westview Press

Grant, K. B. & Ray, J. A. (2013). *Home, school, and community collaboration. Culturally responsive family engagement.* Los Angeles, CA: SAGE.

Henderson, A. T., Mapp, K. L., Johnson, V. R. & Davies, D. (2007, Eds). *Beyond the bake sale. The essential guide to family-school partnerships.* N.Y.: The New Press.

Jeynes, W. H. (2005). A meta-analysis of the relation of parental involvement to urban elementary school student academic achievement. *Urban Education, 40*(3), 237-269.

Ministère de l'Éducation du Québec (2001). Quebec Education Program : Preschool and Elementary Teaching. Quebec.

Virkkunen, J., & Newnham, D. (2013). *The Change Laboratory: A tool for collaborative development of work activities*. Sense Publishers.

ENTROPY AND DIFFICULT CLASSES.
ANALYSIS IN MAIN COMPONENTS OF THE QUALITY OF SCHOOL LIFE IN CLASSES WITH ADHD STUDENTS

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Abstract

Entropy is understood as the measure of the lack of detailed information about a system, it is also associated with the concept of disorder. This paper sets out a survey for the assessment of entropy in the school context, considering the class as a high entropy risk environment, especially in the classes where there is the presence of children with ADHD (Attention Deficit Hyperactivity Disorder) or with behavioral disorders serious. In this perspective, in order to analyze the structural entropy and individual entropy of teachers, a Principal Components Analysis was conducted on the data collected through the administration of two questionnaires (the QUEI-s and the QUEI-p), on a sample of 150 preschool, primary and secondary school teachers. The results here exposed concern only the first of the questionnaires and have shown that the variables that contribute significantly to the explanation of the phenomenon are above all the number of students, the inefficient structure of the classrooms and the presence of rules.

Keywords: ADHD, entropy, *class management.*

1. Entropy in the school context

The concept of entropy has been theorized and applied in specific disciplines such as physics and thermodynamics to describe a feature for which the transformations in each system evolve towards an ever greater degree of disorder. Therefore an increase in "disorder" of a system is associated with an increase in entropy, while a decrease in "disorder" of a system is associated with a decrease in entropy. In the information theory this concept was applied with the studies conducted by the mathematician Shannon (1948) who applied this concept to describe the measure of the amount of uncertainty or information present in a signal. Entropy is therefore considered as a measure of the lack of detailed information about a system and the relationship between them is inversely proportional, the more an event is informative, the less entropy it will be.

As already mentioned, the concept of entropy is also associated with the concept of disorder, if the event is informative, the measurement of the uncertainty level of an event decreases, consequently this event is easily predictable and more orderly.

Starting from this conceptual framework and translating the theory of entropy and disorder, on class contexts, the idea of the contribution that it presents. It intended to reflect on the relational and communicative disorder in educational contexts in which there are students with ADHD. It can be observed that in the subjects with ADHD the behaviours of inattention, impulsive or that denote a marked physical activation, are the result of learning adaptive and functional responses in highly disorganized and chaotic environments .. In these students the degree of "disorder" it is very high, because in these subjects the stimulations, exogenous and endogenous, that fill his mind only partially translate into information, since many of them remain superficial and of short duration, tending the person to pass quickly from a stress to the other (Cena, 2007).

The school environment, due to its importance and significance, is considered the context in which various development processes are founded, and it is a context that has a significant value as it lays the foundations to bring out the conditions for adequate growth. In this context, entropy can be observed and evaluated thanks to the dynamics of classroom management, which includes positive relationships between teacher-pupil, teacher-teacher, teacher-family and also implies the organization and careful planning of life. of class in order to build a productive work environment. (D'alonzo 2012). The class as a

social organization is exposed to phenomena of internal entropy given by the individuality of the teacher and external entropy influenced by the structure of the environment in which the dynamics of individual and social learning occur. Many researches have dealt with the relationship between entropy and Attention and Hyperactivity Disorder: the evaluation of entropy through the analysis of the magnetoencephalogram with the Fuzzy set technique (Gómez et al., 2013), the measure of entropy through spectral analysis (Sato et al., 2013). Also very interesting is the Italian contribution in the formulation and construction of questionnaires for the evaluation of environmental entropy (school and family) and the internal entropy of the main figures of the child's life (parents and teachers) (Fabio et al., 2007).

The questionnaire that assesses the structural elements of the entropy of the school environment has been marked with the acronym QUEIs: Questionnaire of Entropy in Structural Entropy School. Through a series of questions, it is required to indicate on an ordinal scale the frequency with which some characteristics concerning the situation in the environment are detected, the stability in the organization of school life, the use of rules, because it is hypothesized that the low presence of these indicators is a sign of a greater predisposition to the manifestation of behaviors typical of ADHD

The questionnaire shows the total number of students in the class and those considered lively and hyperactive. The physical-environmental situation of the schoolroom, the level of noise present in the environment, the arrangement of the furnishings, the availability of material useful for the teaching activities, the quantity of objects on the desk and on the walls is evaluated. The daily organizational habits of school life are investigated, such as the carrying out of planned activities, the possibility for students to interact during lessons and the presence of a regulation of interventions and behavior.

Another questionnaire that measures the personal aspects of teachers is called QUEIp (Personal Entropy of Teachers). The questionnaire consisting of 27 questions. In this case too, the overall entropy score is calculated by summing the scores of the various items with which the teachers who fill it are asked to express an assessment of their attention span and their degree of hyperactivity and impulsivity.

2. Research: hypothesis, objectives and sample

The research presented in this paper starts from the assumption that the child is an integral part of a context with which he is in a continuous relationship of reciprocity and influence.

The starting hypothesis is that the school environment and the individuality of the teacher can in some way contribute to the child's internal disorder by maintaining or increasing attitudes typical of a child with ADHD or severe behavioral disorders. The objective is to assess the structural obstacles of the class context and the predominant characteristics of the teacher with the aim of intervening on them to improve situational well-being within the classroom and the internal well-being of pupils and teachers themselves.

The questionnaires were administered to a sample of 150 preschool, primary, first and second grade teachers. In the present article, only the results and statistical analyses of the questionnaire on structural entropy, ie the context, are exposed. The Gender variable shows that women are in a higher percentage, 84% compared to 16% of men, as regards the age of registry, most of the teachers who received the questionnaire are over 50 years of age, immediately later with 38% the teachers who are between 40 and 50 years are positioned. The descriptive analysis also shows us that almost half of the sample is a curricular teacher and only 3% have a specific title on didactic intervention with pupils with ADHD, although 43% of teachers declared the presence in the classroom of children with ADHD or serious behavioural disorders.

3. Methodology

Before the statistical processing of data, a database was created with all the scores of teacher responses to the questionnaire items. The internal coherence coefficient of the two questionnaires presented Cronbach's alpha level of 0.49 for the QUEI-s and 0.71 for the QUEI-p, respectively. For greater descriptive clarity the questionnaires were separated and analysed independently. The responses to the items were analysed through the *Principal Component Analysis* (ACP) of the data using the R software.

The ACP is a methodology of multivariate statistics (Kolenikov et al., 2004) which aims to reduce the number of variables used to explain a given phenomenon, using the latent variables (emerged from the analysis) able to synthesize in a way the phenomenon itself is exhaustive.

In this study the ACP is used to understand which items of the questionnaire contribute most to explaining the phenomenon of structural and individual entropy.

4. Structural external entropy: analysis of the QUEI -s

The ACP is a methodology of multivariate statistics (Kolenikov et al., 2004) which aims to reduce the number of variables used to explain a given phenomenon, using the latent variables (emerged from the analysis) able to synthesize in a way the phenomenon itself is exhaustive.

In this study the ACP is used to understand which items of the questionnaire contribute most to explaining the phenomenon of structural and individual entropy.

The Quei-s is a questionnaire that allows observing the structural entropy of the environment, focusing on some fundamental elements such as the order and the qualities of the structure, the organization of school life and the use of rules. The overall score for structural entropy was obtained by adding up all the scores related to the various items, which are shown in the following table:

Figure 1. Item QUEI –s questionnaire.

1. How many pupils are in your class?
2. How many particularly lively children are in your class?
3. How many hyperactive children are in your class?
4. How many objects are present on the desk?
5. How many billboards are hanging in the classroom?
6. Are not the billboards firmly fixed to the wall?
7. Do the posters of the previous didactic activities hang on?
8. Are the desks placed so as to allow everyone a good view and easy movements?
9. Is the classroom temperature good?
10. Is the brightness good?
11. Is the activity scheduled for the day respected?
12. How much would you define the noisy class?
13. On the student desk is only the material useful for the lesson in progress?
14. How can students interact with each other during your lesson?
15. Have you set precise rules for student interventions?
16. How important is the order in the classroom for you?
17. How many basic behavioural rules are to be observed during lessons

The ACP was applied to the questionnaire items to evaluate which items contribute most to the formation of significant components to explain the phenomenon of structural entropy. The components were chosen through the variance evaluation method explained by each component, the higher the variance the more significant the component is. In this case the first three components were chosen, because together they explain more than 40.3% of the phenomenon.

The table 1 shows which items are most significant and to which extent the main components are saturated. The other items have been excluded from the matrix, because with saturation lower than 0.50:

Table 1. Significant items of the QUEI-s questionnaire.

ITEM	COMPONENTE 1	COMPONENTE 2	COMPONENTE 3
8	0,742		
9	0,717		
10	0,781		
11	0,672		
2		-0,629	
12		-0,620	
16			0,533
17			0,535

Component 1 is positively saturated by items 8, 9, 10 and 11 and refers to the Structural and Didactic Organization (good brightness and temperature, easy movements in the environment).

Component 2 is negatively saturated by item 2 and item 12. It is referable to the number of children (number of particularly lively students and noise of the class).

Component 3 instead is positively saturated by items 16 and 17, and is referable to the Rules and school order (the order in class, number of rules to be respected during the lesson).

The contribution of each item to the formation of the different main components can be seen in the following graph:

Figure 2. Circle of correlations between components 1 and 2 and components 1 and 3.
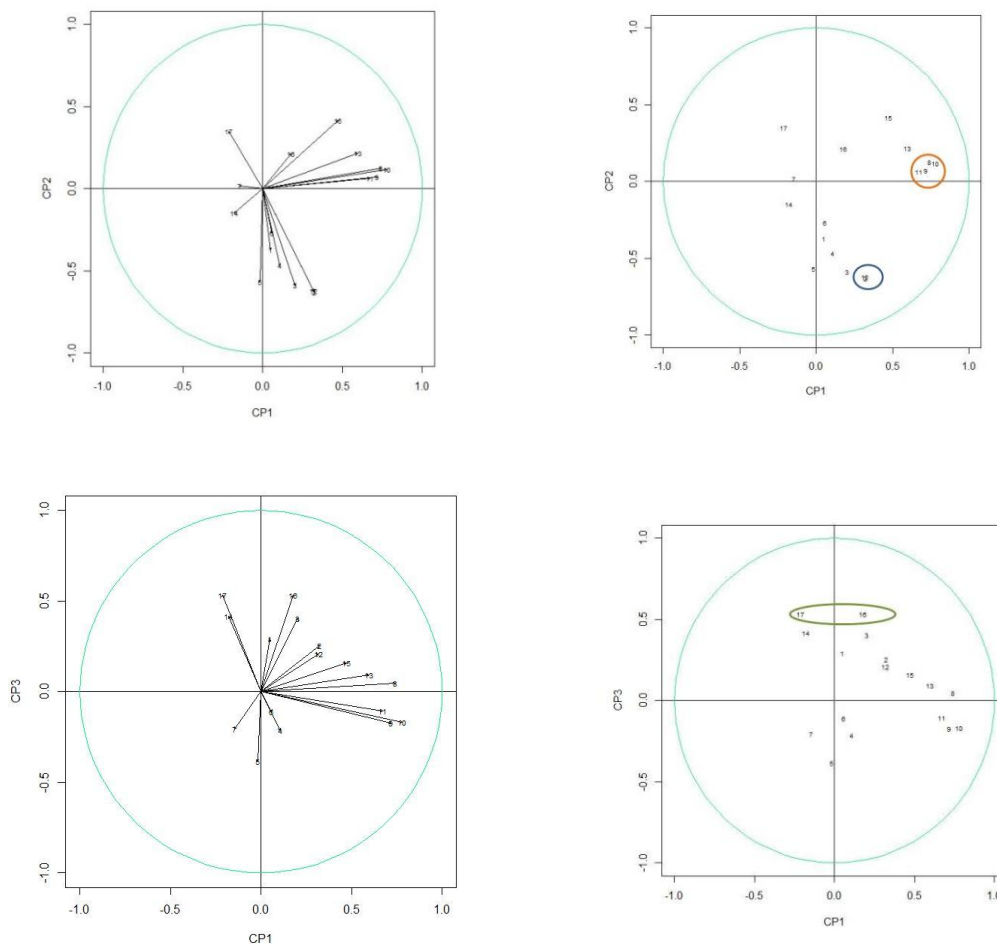
In the correlation circle the variables are represented by vectors, whose length expresses the degree of quality of the representation. The angles between the different vectors indicate, instead, the correlation between the same, while the angles between the vectors and the factorial axes denote the degree of correlation between the latter. For a greater descriptive clarity, the circle of correlations without the vectors was also inserted, to show more precisely the number of items and their position.

The chart shows that items 2 and 12 positively correlate with Component 2 (Number of children), while items 8, 9, 10 and 11 with Component 1 (Structural and educational organization).

Regarding Component 2, it can be assumed that teachers who are positioned in the two quadrants at the top have more numerous and noisy classes, made up of many lively and hyperactive children, as opposed to teachers placed in the two quadrants below. While for Component 1, it can be assumed that teachers who are positioned in the right-hand side are teachers who have described the classroom environment in a positive way, as opposed to teachers placed in the two quadrants on the left.

Regarding Component 3 relating to the *Rules and School Order*, observed in relation to Component 1, it could be observed that item 16 (*Importance of the order in the classroom*), and item 17 (*Number of behavioral rules to be observed during didactic activities*), saturate positively this component. The relation of these items with Component 1 is interesting, in fact item 16 is positioned on the positive side, while item 17 is negative. It could therefore be assumed that the teachers positioned on the right side have expressed a positive opinion regarding the structure and organization of the class environment, focusing on the order, organizing also the teaching routine, setting basic rules to be respected during the lessons. Teachers placed on the opposite side despite their negative judgment regarding the structure and the school environment, believe that it is important to set precise behavioral rules. So, despite conflicting opinions on the classroom context, it seems prevalent that you cannot disregard a set of rules set by the teacher that aim at self-regulation of behavior by students.

The correlation graph then shows how contextual disorder is significantly correlated with variables of size and noise of the class. In fact, often there are complaints from teachers who are forced to manage and control too many classes, often composed of very lively and hyperactive children, not taking into account the teacher's emotional and cognitive difficulty in coping with this problem.

The physical structure of the classrooms is often added to the large number of classrooms, in particular a very bad arrangement of the desks, which not only promote a bad view, but above all do not allow easy movements for children and teachers. Other elements that contribute to a climate of general disorder related to the classroom environment are the brightness and temperature in the classroom. The variable Order and behavioral rules are also very important. Often if not decided they can contribute to the general disorder, making the environment chaotic and obstinate.

5. Conclusion

The contribution presented the evaluation and quantification of entropy in the school environment, related to the structure and organization of the school. Specifically, one of the most significant and significant contextual factors is the difficulty of managing a chaotic environment, above all because of the number of children within the class group. The influence of the number creates not only spatial disorganization inside the classroom (too many badly arranged desks, excessive material available, small classrooms that are not suitable for containing many children, difficult movements between the counters), but also the difficult management by of the teacher, who must control and manage this chaosity.

The school should be the facilitating context that allows each child, in his specialty, to experiment his own limits and skills without experiencing frustration or inadequacy, consequently, it should be not only the place where the teaching process takes place - learning, but above all an environment that educates and educates in harmony with a welcoming and functional place, suitable for children and in line with their needs.

Teachers who have described a situation of contextual wellbeing consider the presence of rules equally important, even teachers who, on the contrary, describe a situation of poor well-being consider a situation of order indispensable. The element of the order therefore shares both teachers and year described their class as a positive learning environment as well as teachers who have described their class as an inappropriate environment. These results are not exhaustive and leave many open scenarios worthy of evaluation and analysis, but offer a valid basis from which to lead to an improvement not only of the situational well-being of the classroom context but also of the internal well-being of its pupils and teachers themselves.

References

Cena, L. (2007). Disturbo da deficit di attenzione e iperattività: variabili ambientali. *Università Cattolica del Sacro Cuore, XIX ciclo.*

D'Alonzo, L. (2012). *Come fare per gestire la classe nella pratica didattica.* Giunti Editore.

Di Pietro, M., Bassi, E., and Filoramo, G. (2001). *L'alunno iperattivo in classe: problemi di comportamento e strategie educative*, volume vol 44. Edizioni Erickson.

Fabio, R. A., Antonietti, A., Cena, L., and Guarnieri, A. (2007). Queise queip: strumenti di valutazione dellâ entropia nellâambiente-scuola dei bambini con ddai. *Imparare*, vol 2:pp 43–60.

Gómez, C., Poza, J., Fernández, A., Bachiller, A., Gómez, J., and Hornero, R. (2013). Entropy analysis of meg background activity in attentiondeficit/ hyperactivity disorder. In *2013 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, pages 5057–5060. IEEE.

Kolenikov, S., Angeles, G., et al. (2004). The use of discrete data in pca: theory, simulations, and applications to socioeconomic indices. *Chapel Hill: Carolina Population Center, University of North Carolina*, pages pp 1–59.

Sato, J. R., Takahashi, D. Y., Hoexter, M. Q., Massirer, K. B., and Fujita, A. (2013). Measuring network's entropy in adhd: A new approach to investigate neuropsychiatric disorders. *NeuroImage*, vol 77:pp 44–51.

Shannon, C. E. (2001). A mathematical theory of communication. *ACM SIGMOBILE Mobile Computing and Communications Review*, vol 5:pp 3–55.

Wentzel, K. R. (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. Journal of educational psychology, 90(2), 202.

THINKING OUTSIDE THE CLASSROOM: ENGAGING YOUNG PEOPLE IN LEARNING THROUGH 'NOT-SCHOOL' PROGRAMS AND PEDAGOGIES

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Abstract

The well-known phrase of 'thinking outside the box' is a metaphor referring to the process of viewing things differently, from new perspectives, or in an unconventional way. It has become a shorthand way of describing innovation and creativity in finding solutions to problems. In relation to 'the problem of education' this same metaphor of *thinking outside the square* can be applied to *thinking outside the classroom,* and even outside the school. Compulsory schooling is seen as a basic responsibility of civil society, yet for many adolescents it can be a narrowly defined experience which limits them inside the box. Alternative learning programs that engage young people and offer educational opportunities in which they are able to contribute agency and learn for their own sake, not just for learning's sake, are well documented and include an emerging field of educational provision labelled *Not-school*: learning that is generally non-formal or informal, yet contributes to re-engagement, skill development and increased motivation for young people that can be ends in themselves, as well as creating pathways into formal learning and/or further education. Not-school programs are literally outside the box; outside the boundaries imposed by traditional compulsory schooling. This paper describes the Not-school trend with examples of educational initiatives and practices that contribute to the schooling of children and young people, yet do not occur within the physical boundaries of the classroom and school, often not even delivered by qualified teachers, and in many cases engaging young people through creative, innovative and entrepreneurial methods.

Keywords: Not-school, engagement, youth culture, alternative learning programs, innovation and entrepreneurship.

1. Introduction

This paper introduces and discusses alternative learning programs that operate outside of the traditional confines of school, usually applying adult learning methodologies, often employing the creative arts as a point of interest for young people otherwise disengaged from the standard curriculum, and mostly delivered not by school teachers but by community educators, parents and many others. They are a form of education now characterised as part of the 'Not- school' movement, which includes all out-of-school educational experiences such as homeschooling, which itself is part of an emerging trend of 'unschooling'. School leaving age and school retention are all issues related to how long we expect young people to remain in institutionalised learning situations, while pathways to further education and/or careers are no longer simply linear, and gap years are becoming the norm. These trends require us to think outside traditional classroom and school structures

The well-known phrase of 'thinking outside the box' is a metaphor referring to the process of viewing things differently, from new perspectives, or in an unconventional way. It has become a shorthand way of describing innovation and creativity in finding solutions to problems, and is associated with the corporate management and marketing world where the phrase supposedly appeared in the 1970s to describe lateral thinking and brainstorming of new ideas. However the related idea of 'thinking outside the square' is actually much older and originated with a puzzle that can be traced back at least to 1914 with the publication of Sam Loyd's *Cyclopedia of Puzzles*. The 'Nine dots puzzle' presents a square comprised of nine dots arranged in three rows. The trick is to connect all dots with only four lines, but trying to connect the dots by staying within the square is not possible and can be very frustrating. The solution literally requires going outside the square. Like many puzzles, the solution once seen looks obvious; however it represents a new way of seeing, and since there are no rules to suggest that you can't go outside the square, this is an example of how we impose rules on ourselves that are not even there, limited by our pre-determined frames of reference.

This kind of lateral thinking that challenges existing frames of reference is often used in approaching and looking for solutions to what have become known as *wicked problems*: a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often hard to recognize. Wicked problems present the kind of puzzle for which there is no convenient answer at the back of the book; they are complex and unique and attempting to address them may generate more problems (Lawson, 2016); and they arise in the context of social policy issues including environmental, political and economic, in which purely scientific-engineering problem solving approaches cannot be applied because of the lack of a clear problem definition as well as the differing perspectives of multiple stakeholders (Rittel and Webber, 1973). The point of all this in relation to 'the problem of education' is to apply this same metaphor of thinking outside the square to thinking outside the classroom, and even outside the school. *Education outside the classroom* can take many forms, and not always because of political or religious impositions; or resource limitations; but for purposeful, pedagogical and philosophical reasons.

2. Deschooling

In 1971 the Austrian philosopher, polymath and Catholic priest Ivan Illich (1926-2002) published a landmark book entitled *Deschooling society*, a radical discourse on modern society in which he systematically critiqued formal institutionalised schooling as being responsible for institutionalising society, ineffectual in educating young people, and actually inducing ignorance. At a time when global ecological issues were becoming wicked problems, when the military-industrial complex was overtaking nation states in world politics, and when technological innovations and economic prosperity in the developed world only highlighted the disadvantage and poverty in the third world, Illich believed that schooling was part of the problem:

School is the advertising agency which makes you believe that you need the society as it is. (Illich, 1971: 163).

Disestablishing schools and promoting networks of like-minded people learning, sharing and caring through *educational webs* would break the nexus of schooling which – through both the overt and the hidden curriculum - simply reproduced the bourgeois capitalist and commercial culture that was responsible for the problems of society as Illich saw them in 1971. As well as being critical however, Illich was actually very prescient in offering innovative suggestions based on the use of computer technology, with his reference to *webs* of learning as the reverse of the *funnels* through which knowledge was transmitted in schools, even predicting social media with his descriptions of computer-based peer-matching networks thirty years before Facebook.

Illich's basic idea of 'deschooling' was centred on a model of self-education, which would replace the need for institutions and bureaucratic structures. Instead, at birth every child would receive entitlements in the form of tuition grants, or 'education credits' which they could expend at 'skill centres' of their own choice. Again Illich was prescient in foreseeing contemporary discussions around the perennial problem of equitable funding of education, which still include debates around the merits of such voucher systems. However he also flagged the dangers of interest groups stepping into such a free education market and more or less predicted the UK Academy schools, the US Charter schools, and the general McDonaldisation of education which has occurred, even if deschooling has not.

Illich's radical ideas did however spark a lot of interest at the time, and have since led to various other movements away from traditional universal schooling. In his observations that educational activities are also organised around common interest groups and themes found in organisations as diverse as political parties, clubs, neighbourhood centres, unions and professional societies, Illich reinforced the view taken in this paper that much of what we learn occurs outside of and beyond formal schooling. This also reinforces the role of 'the village' in raising children, and also foregrounds the importance of lifelong and adult learning approaches to education which have been seen to be more effective in engaging young people who otherwise have switched off and dropped out of school. As Illich noted "because school is obligatory it becomes schooling for schooling's sake" (1971:15). Operating within the rituals and ceremonies of school then becomes self-referential and self-perpetuating and limits thinking to 'inside the box'. Compulsory schooling as discussed earlier is seen as a basic responsibility of civil society, yet for many adolescents it amounts to a sort of prison sentence in which they are required to attend, behave a certain way, dress a certain way and work in a certain way – all prescribed by circumstances they have little control over. In South Australia for example, the school leaving age is set at 17 by legislation, and while the developing adolescent or young adult does not want to be treated like a child, this is what compulsion implies, raising a key question:

At what point in our lives are we able to take responsibility for our own education rather than be subjected to what someone else believes we should be learning?

3. Not-school

Programs that have been shown to engage young people and offer educational opportunities in which they are able to contribute agency and learn for their own sake, not just for learning's sake, have been well documented. They comprise an emerging field of educational provision which has been labelled 'Not-school' (Sefton-Green, 2013). *Not-school* is a term used to describe learning in educational settings that are generally non-formal or informal, yet contribute to re-engagement, skill development and increased motivation for young people that can be ends in themselves, but also create pathways into formal learning and/or further education. The salient feature of Not-school programs is that they are literally outside the box – outside the boundaries imposed by traditional compulsory schooling, which include the physical requirements of daily attendance on school grounds as well as more subtle boundaries such as regulations that control dress, behaviour, attitudes and authority structures.

Programs based outside of school grounds appear to be a preferred option for those young people who genuinely find it difficult to be in a school environment for a range of personal, social and emotional reasons. During my research for the Social Inclusion Unit in South Australia, a number of young people declared that they refused to set foot inside a mainstream school, not necessarily for behavioural or learning issues but because of the perceived restrictions of the environment: "they treat us like kids, you have to wear a uniform, they have rules like needing a note just to go to the toilet" (Stehlik, 2006: 18). Off-campus alternative learning settings encourage the possibility for young people to be treated as individuals, and for older learners to be treated as adults, usually in class settings where the teacher-student ratio is low (ideally a median of about 1:8), with staff who are generally sympathetic to their needs as well as being understanding of youth culture and the issues facing young people.

Programs operating outside of school restrictions like class timetables and subject lines can also offer a more flexible approach to attendance, which can be negotiated and in some cases includes a weekly afternoon or whole day where attendance is not required. Students may not always attend but keep in touch with teachers via mobile phones and text messaging and often do work 'at home', but in some cases the learning centre is the only constant and regular environment if they are couch-surfing or finding home life dysfunctional, distracting or even dangerous.

A number of case studies reinforce the gap between mainstream expectations of compulsory schooling and the realities of life for many young adolescents. One alternative learning environment case study in South Australia was an inner-city state funded Community School, which offered a 'second chance' or in some cases a 'last chance' for around 150 excluded and disengaged young people aged 12 - 15. The school staff reported that they found themselves dealing more with health and welfare issues rather than educational interventions, and often students were coming to school for respite from dysfunctional domestic situations. In addition to taking on students excluded for four weeks or more from other schools, this program offered negotiated education plans for students, supported by case workers and with a community focus. Anecdotal evidence suggested that 'the kids behaved brilliantly' and the program was seeing at least 50% achievement by the cohort into various job provider pathways.

The model provided by this type of arrangement was also observed in a 'Youth Pathways Program' supported by a larger southern suburbs high school, in which students were enrolled at the school but attended programs conducted away from the school – through a non-profit service provider Mission Australia, using community facilities as well as those of the local vocational college. The young people enrolled in this program who had disengaged from mainstream schooling included young teenage mothers, a demographic cohort who also feel shunned and judged by teachers and exclude themselves from mainstream schooling. The school received the funding for each student and supplied a staff member who worked exclusively off-campus, supported by case managers. These programs are an example of the emerging model of education provision that involves community, non-government and charitable organisations as well as government agencies in partnership with schools to provide successful alternative learning pathways.

4. Doing school differently

The clear advantage of 'doing school differently' (Bills and Howard, 2016) through alternative educational programs is to offer more flexibility to young people with attendance, curriculum choice, learning pathways and teaching methodologies. Some students simply need more time to cope with studies, however schools are generally not flexible enough to accept a student taking three years to complete one year of schooling. Furthermore, some students simply cannot cope with a full day of school every day, so it is also important to be flexible about attendance, and within the bounds of duty of care obligations, being able to negotiate their own timetable empowers students and actually contributes to increased attendance, rather than enforcing attendance at school for a set number of hours each day which does not seem to work for some young people. In fact with the increased use of flexible and on-line

learning methodologies in other education sectors, it is surprising that more alternatives to face-to-face classroom teaching are not being considered in schools. There is also a small but radical movement towards viewing educational provision as a 24 hour-a-day 7 day-a-week concept in order to offer real choice and flexibility, with teachers in alternative settings already reporting the importance of being on call and available after hours by students. While this has all sorts of industrial and resource implications, it is an idea worth expanding upon.

If the benefits of flexible and alternative learning environments are accepted as given, the key question is how to incorporate such programs into mainstream schooling without resulting in the inevitable drift back to a regulated structure and therefore compromising their 'alternative' nature. If it is accepted that one educational size does not fit all students, the challenge is to allow such programs to remain off to one side but still be seen as a necessary and important part of the bigger educational picture. This is a dilemma for policy-makers and for planning schooling for the 21st century given the funding models, structures, traditions and legislated limitations that are still entrenched in the way we think about schooling. However, there are examples of flexible alternatives to learning that are clearly demonstrated as operating successfully wholly within a school-based environment, and these demonstration projects can provide a good practice model for other schools to take up within the context of their local community and available resources.

5. Youthworx

A case study model of successfully re-engaging disadvantaged and disaffected youth through generating interest and entrepreneurial opportunities in the creative industries is that of *Youthworx*, a program that began in Melbourne in the early 2000s and is now providing a template for arts-based initiatives in other Australian states, giving another example of Not-school that not only aims to educate but to promote alternative and innovative career opportunities in what has been termed the *purpose economy* (Hurst, 2014). For millennials, the concept of a conventional career path in the traditional sense as experienced by previous generations is no longer viable, with unemployment and underemployment fuelled by technology and automation leading to disappearing jobs, but at the same time creating new *purposeful* opportunities to launch technology-based start-up enterprises or develop freelance skills and expertise, based in local communities, utilising social media, and operating outside the standard full-time, nine-to-five, job-for-life model that was the norm through most of the 20th century. Youthworx has exploited this trend for social enterprise by focussing on a particular niche market – the creative industries, which by definition include the visual arts, the performing arts such as music and dance, and media including radio, film and television. Beginning as an initiative to re-engage young people who were not learning or earning and often at risk from homelessness and other personal issues, Youthworx set up a workshop for teaching and learning radio broadcast skills. The success of this eventually progressed to teaching and learning film-making, with more funding to purchase the equipment and technology required. Youthworx Media is now an established enterprise that not only offers workshops and training in film-making, but also provides film-making services on a commercial basis, so that participants can also experience a business model that is creative, sustainable and community-oriented.

Describing this as "positive youth development theory" based on a strengths-based approach rather than a deficit position, Youthworx Media operates as "a three way relationship between training providers; Industry professionals who provide mentoring and make sure we deliver on a program that leads to job opportunities; and professional youth workers who provide support that goes the full distance." (http://youthworxmedia.org.au/index.html)

Here we have another example of the wrap-around model of education - providing support as well as learning opportunities for young people, through a joined-up approach that involves a team effort with educators, social workers and industry professionals from the local community. The beauty and added value of the Youthworx model is also the creative outlet that is offered through learning and working in media, which enables and empowers the young participants to express themselves and affirm their identities through film and especially music, which for millennials is usually through the genre of rap. Popular culture, which forms such an essential part of the identity and life-worlds of young people, can therefore work together with education in a positive way.

6. Unschooling, homeschooling

A more radical response to the 'problem of education' has been the *unschooling* movement, inspired by Ivan Illich's call to 'de-school society' and taken up by John Holt in the 1970s and 80s, which is now manifest in the expanding interest in ways to educate children without sending them to school at all, such as the growing trend of *homeschooling*.

John Holt (1923-1985) was an American teacher who believed that children did not need to be coerced into learning, that they would do so naturally if given a rich assortment of resources and the freedom to follow their own interests. This line of thought is directly descended from Rousseau, but in the last few decades has developed into the movement of *unschooling*. Holt believed one of the main things holding children back from learning in school was fear: fear of getting the wrong answers, fear of being ridiculed by the teacher and classmates, fear of not being good enough; and that this was made worse by children being forced to study things that they were not necessarily interested in. Even without the perceived negative influences of traditional schooling, Holt argued that "home is the proper base for the exploration of the world which we call learning or education. Home would be the best base no matter how good the schools were" (1980).

Putting pressure onto children in general can also affect a child's performance in school. Holt pointed out that behavioural problems and disengagement in the classroom often resulted from children reacting to being put under pressure by setting their own limits, tuning out, not paying attention, fooling around and often just saying that 'they don't get it'. If teachers spend "70% of learning time trying to manage behaviours" (ABC RN, 2017) it makes sense to take a long hard look at the causes of this and not just try to deal with the symptoms.

Blurring the boundaries between school and home is exemplified by *homeschooling*, which can turn everyday activities such as cooking, cleaning and gardening into opportunities for learning, as well as having dedicated study time and formal lessons which can be mediated by information technology and guided by set curricula. Reasons given by parents who are joining this increasing trend for homeschooling their children include bullying, peer pressure and a competitive environment in schools focussing too closely on academic performance at the expense of well-being. Other reasons include religious beliefs, personal philosophies, having children with special needs and a general dissatisfaction with compulsory schooling (ABC TV, 2017). Despite the legislative requirements of compulsory schooling, home schooling is legal in Australia and parents do not require educational qualifications, although each child must be registered according to the appropriate guidelines and the relevant authorities. The academic performance of homeschooled students is also claimed to be slightly better than average compared with students who attend school (Smith, 2016), but in the main homeschooling parents seem to be more concerned that their children are happy and experiencing a range of living and learning opportunities in a loving and safe environment, based on the fairly solid argument that parents understand their children more than anyone else. Homeschooled children go on to university, further education and working lives just like other children. While homeschooling is a growing trend as part of the unschooling movement, it is not necessarily a choice available to all parents, but will depend on domestic and socio-economic circumstances as well as philosophical ideals. Interestingly, and not only just in families where the father is the main breadwinner, the role of the homeschool teacher appears to fall mostly to mothers – a challenge to our thinking outside the square if we are going to take a whole-of-community, whole-of-society view of education in light of the well-known epigraph: *It takes a whole village to raise a child.*

References

ABC Radio National (2017). *The World Today,* June 2, Australian Broadcasting Corporation
ABC TV (2017). 'School's out', *Compass,* June 3, Australian Broadcasting Corporation
Bills, A and Howard, N, (2016). What then must we do? Rethinking social inclusion policy for educational attainment in South Australia. *Journal of Educational Enquiry*, *Vol 15,* No 1, pp. 25-43
Holt, John (1980). *The Natural Child Project,* https://web.archive.org/web/20110923153702/http://www.naturalchild.org:80/guest/marlene_bum garner.html Retrieved 7/7/17
Illich, I, (1971). *Deschooling society*. New York: Marion Boyars
Lawson, H, (2016). Categories, boundaries and bridges: The social geography of schooling and the need for new institutional designs. *Education Sciences, Vol 6*, No 32, pp. 1-14
Loyd, S, (1914). *Cyclopedia of puzzles*. New York: The Lamb Publishing Company
Rittel, H and Webber, M, (1973). Dilemmas in a General Theory of Planning. *Policy Sciences*. No 4, pp. 155–169
Sefton-Green, J, (2013). *Learning at not-school: A review of study, theory and advocacy for education in non-formal settings*. Massachusetts: MIT Press
Smith, A, (2016). Home-schooled kids perform better in NAPLAN: report, *Sydney Morning Herald,* February 7, http://www.smh.com.au/nsw/homeschooled-kids-perform-better-in-naplan-report-20160204-gmlgu9.html Retrieved 8/7/17
Stehlik, Tom 2006, Levels of engagement: Report of findings prepared for the Social inclusion Unit on the action research project across school retention initiatives, Adelaide: UniSA / South Australian Government

AUDIO DESCRIPTION FOR INCLUSION. LISTENING COMPREHENSION AND ABILITY OF EMPATHY IN PRIMARY SCHOOL CLASSES

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Abstract

Audio Description (AD) is a narration service to make audiovisual content accessible for all. AD plays a facilitator role of educational settings in terms of inclusion and learning, accounting for the learning context a pedagogical tool directing the didactic intervention towards meeting the needs of everyone, without exception. Starting from this perspective, the paper presents quantitative and qualitative research aims to evaluate listening comprehension Ocelot's animated film *Kirikou and the Sorceress* (1998). In 9 primary classes for a total of 172 students feature film was shown in three different modes: 1) standard mode with AD, without video; 2) integrated use, standard mode with AD; 3) standard mode without AD. Upon conclusion on listening of each phase, the students have been provided with: 1) questionnaire with the aim of evaluate the film's storytelling understanding; 2) group interview in order to know the real ability of students to understand through listening. Data analysis shows that the different modes of audiovisual enjoyment have allowed the classroom setting to live an unusual learning experience aimed at promoting, through the empathy and multisensoriality, inclusion at school.

Keywords: Inclusion, audio description, school, listening comprehension, learning.

1. Audio description: audiovisual content accessible for all

Audio Description (AD) is a process of translating visual information into words for people who are blind or have low vision, a support service whose main goal is to reduce the visual deficit by making accessible any visual message with appropriate substitute narrative information. It is a voiceover, aimed at describing aspects of audiovisual products that are not accessible: visual component (shares, body language, facial expressions, setting, clothes/costumes). In recent years, also in relation to "visual predominance" in teaching and learning activities (Calvani, 2011; Clark, Lyons, 2010), pedagogical reflection considered the AD a field of study close to their research interests (Fiorucci, Pinnelli, 2013). According to the *International Classification of Functioning, Disability and Health* (ICF) perspective (WHO, 2001), AD may have a facilitating role in the social and educational contexts (inclusion and social participation, learning). Studies about the using of AD in educational contexts have focused on the evaluation of the benefits that such support may have about numerous aspects: learning processes, mentalistic abilities and social inclusion (Kirchner, Schmeidler, 2001; Braun, 2008; Szarkowska, 2011). Although AD studies have been initiated to address the specific needs of people with visual impairments, in recent years, the attention of researchers focused on the evaluation of the benefits that such support can have on education and learning processes for all (Pinnelli, Fiorucci, 2015; Kleege, Wallin, 2015).

2. AD4inclusion project: research aim and hypotheses

In 2016, Center on new technologies and Inclusion (CNTHI) of the University of Salento has launched the AD4Inclusion research project aimed at customize different contexts to develop students' listen comprehension and critical thinking skills through accessible description of Ocelot's film *Kirikou and the Sorceress*, audio described by CNTHI in 2012. Educational film tells the adventures of Kirikou, an African child, that bumps into a witch who deprived his village of water and killed every person who defied her. He is a special that fights against the prejudices of his own village and against the witch and what it represents. Film has been proposed in nine primary school classes (Lecce, Italy), in which pupils with visual impairment are present. We hypothesized that the presentation of the audiovisual aid:
    • H1. for the class group it is not a barrier to understanding the film narrative;

- H2. for pupils with visual impairment it is an essential and functional facilitator to their learning and enjoyment needs;
- H3. for the classroom it is an inclusive practice that, through multisensory experience, promotes listening comprehension and the ability to identify.

Film has been proposed into 3 phases and 3 different modes of use:1st Phase, all pupils have been blindfolded and listened movie with AD (10 min. of the film); 2nd Phase, fruition for all of the audiovisual (15 min.) with video and AD; 3rd Phase, standard modality for all, without AD (20 min.). Every phase used different part of the movie.

3. Methodology

Sample is composed by 172 children (M 45,93%; F: 54,07%; Average 8,02 - St. dev. 1,52 Age), 8 with visual impairments, that belong to 9 classes of 8 schools (Lecce, Italy).

Table 1. Sample.

Classes	I(2)	II(2)	III(1)	IV(1)	V(3)
Pupils	36	34	25	21	56
% Pupils	20,93	19,77	14,53	12,21	32,56

3.1. Tools and procedures

For the qualitative and quantitative research, 3 tools were used (A, B, C):

A) CO-TT pre-test (Carretti et al., 2013): an implementation and enhancement package of the ability to listen and text understanding. It has been submitted to primary school third-to-fifth grade students only.

B) After listening/viewing of each phase, the students have been provided with the questionnaire K4ALL: 42 multiple choice items (three possible answers), for five different variables: 1) *Memory*, ability to remember audiovisual contents; 2) *Sequencing*, ability to reconstruct the audiovisual story; 3) *AD References*, ability of memory and comprehension of elements with AD; 4) *Comprehension of the film's plot*: knowledge of the key plot elements; 5) Language: comprehension of linguistic proceedings. The item related to the variable sequence have been given to primary school third-to-fifth grade students whilst those related to variable references AD have been considered only in the first and second way of reception.

C) After reception experience, a group interview has been made in order to know the real ability of students to understand through listening. They were asked to reflect on practical-communicative aspects: literal, semantic-lexical of the plot related to the language of the movie they had seen. These interviews have been videotaped and then they have been transcribed and valuated.

4. Results: primary school pupils' performances in understanding and analyzing film

Data analysis was conducted with SPSS 20.0 (*chi-square, correlation coefficient and variance analysis*); while on the transcripts of group interviews it was developed qualitative analysis about understanding film. Descriptive analysis of CO-TT pre-test data, shows that pupils from the third to fifth grade of primary school (n=102) have short-term memory difficulties, reporting critical performance, often below average (the score related to the list varies from 0 to 3) (tab. 2). On the contrary, pupils with visual impairment (n=4) have excellent mnemonic performance: they remember almost all of the objects in the list, according to the order of presentation (tab. 3). The class has been primarily provided with the readings of six wording lists which the students needed to remind their order and thus manage the respective types of objects by hearing those words only once.

Table 2. Sample CO-TT Pre-test scores.

List of words	I	II	III	IV	V	VI
Average	0,99	0,83	1,40	1,14	1,60	1,66
%	33,01%	27,78%	46,73%	37,91%	53,27%	55,23%

Table 3. Pupils with visual impairments CO-TT Pre-test scores.

List of words	I	II	III	IV	V	VI
Average	2,33	2,66	2	2,66	2	2,66
%	77,78%	88,89%	66,67%	88,89%	66,67%	88,89%

As the literature notes, the blind uses of short-term auditory memory to control contextual information. Descriptive analyzes of the K4ALL questionnaire provide a summary of the three groups in terms of average and standard deviation of performances. In the Factor Outputs section (tab. 4), a summary of the groups defined by the Independent variable Phase and the dependent variable performance for phase, it is confirmed that Phase III performance is the highest average (mean=0.86) and the less variable (SD=0.148).

Table 4. Factors outputs section, Measure Performance.

Performance	Average	St. Dev.
F1_correct	,597	,1737
F2_correct	,7936	,17962
F3_correct	,8643410853	,1480822590

Percentage frequencies for item (tab. 5) and by variable (tab. 6), show that the sample performance improves with to the succession of phases, i.e. in phase II and phase III, there are better performances. Referring to memory variables, AD references, and comprehension, the best performances are attributable to standard fruition (III phase), while referring to sequential and language variables, better performance is achieved in integrated use, that with Video and AD (phase II).

Table 5. Percentage frequencies for item.

Phases	Memory			Sequencing			AD References			Comprehension			Language		
	M.1	M.2	M.3	S.1	S.2	S.3	R.A.1	R.A.2	R.A.3	C.1	C.2	C.3	L.1	L.2	L.3
I	55,23	67,44	24,42	16,67	55,88	77,45	80,23	40,12	76,16	73,26	47,67	76,74	59,30	74,42	62,79
II	70,93	80,81	95,35	70,59	92,16	86,27	66,28	63,37	92,44	74,42	84,88	83,72	86,05	68,02	86,63
III	95,35	94,77	94,19	94,12	65,69	75,49	-	-	-	84,30	93,02	94,77	91,28	66,86	79,07

Table 6. Sample: percentage frequencies for variables.

Phases	Memory	Sequencing	AD References	comprehension	Language	chi-square
I	49,03%	66,50%	65,50%	65,89%	65,50%	,000
II	82,36%	83,01%	74,03%	81,01%	80,23%	,000
III	94,77%	78,43%	----	90,70%	79,07%	,000

Table 7. Pupils with visual impairments: percentage frequencies for variables.

Phases	Memory	Sequencing	AD References	Comprehension	Language
I	50%	41,67%	70,83%	83,33%	66,67%
II	83,33%	83,33%	58,33%	79,17%	70,83%
III	87,50%	37,50%	-	83,33%	83,33%

However, there is no critical performance. Also descriptive analysis of the blind's performance confirms this progressive improvement. Percentage frequencies for variable (tab. 7) show, at each stage, the best performances. In the phase 1 and 3 there are critical performance related to the sequential variable, i.e. performances, as in the general sample, improve in integrated use (phase 3), while, unlike the general sample, AD References and Film comprehension are most useful to blind in phase 1. Results show that the global performance of children, measured as% of the correct answers on the total answers provided by the subjects, depends on audiovisual use (three phases). Inferential analysis also confirms this. The chi-square statistic test shows that the frequency values in the different phases and the five variables are significantly different ($\chi 2$=, 000, tab. 6): it indicates a significant causality between the

"phase" variable (I, II, III) and the five variables investigated. This result is also confirmed by linear correlation: there are relationships between the performances obtained by subjects in the different phases (tab. 8), i.e. all correlations are statistically significant (p-value <0.05) with a direction indicating, for all variables investigated, a direct (positive) link and a moderate intensity (PXY> 0.3). ANOVA test for repeat measurements with Greenhouse-Geisser correction indicates that the performance of children are significantly different in terms of audiovisual use [F(1,920, 328,344) = 211,563; p <0.0001].

Table 8. Correlation coefficients scores.

Performance-phase correlation		I phase	II phase	III phase
I phase	Pearson correlation	1	,416[**]	,398[**]
	2-tailed significance		,000	,000
II phase	Pearson correlation	,416[**]	1	,540[**]
	2-tailed significance	,000		,000
III phase	Pearson correlation	,398[**]	,540[**]	1
	2-tailed significance	,000	,000	
**2-tailed significance 0,01				

The effects test within subjects is significant (p-value=0,000). Data confirms that at least one of the phase performance averages is significantly different from the others. Test F confirms that there is a difference between performance averages at different phases. Consequently, also inferential analysis also confirms that the succession of the phases corresponds to better performance and that the differences between the sighted and blind audience relate to those fundamental competences in understanding, in the elaboration of the sequential story/plot.

Pupils' perceptions analysis shows two principal thematic nuclei: 1) comprehension of the film text; 2) perception of the multisensory experience.

1) Perceptions show that the class group knows the basic elements of the film: characters, their characteristics, roles, relationships and motivation of their actions; spatial and temporal setting. Pupils have identified symbolic meanings and a moral of the film story; they have formulated hypotheses, to present their views on what happened (the plot) and about the narrative elements that are latent or not expressed. Perceptions show positive narrative meanings: triumph of good on evil, love on hatred, forgiveness on envy, truth on lie, confidence on skepticism, appearance on authenticity.

2) At the beginning, children's perceptions show moods of feeling of fear, disorientation, numbness, inhibition, and difficulty in understanding. After there was a normal adaptation phase: pupils compensated visual deprivation by focusing on to sound inputs. In the second mode of use (AD with standard projection), the pupils used the two sensory registers, in an integrated and interference-free manner. They distinguished the track from the AD, showing interest on audio commentaries. The latest mode of fruition, the standard one, has generated the loss of some information in pupils with visual impairment. However, all children have been able to understand the basic and key elements of film plot. Children have simulated a sensory deficit condition, experimenting educational barriers and facilitators.

5. Conclusions: AD as a Pedagogical Tool

Quali-quantitative analysis data related to the different modes of enjoyment confirms the first and second hypotheses of research: AD is not impediment or barrier to understanding the film and, for pupils with visual impairment; it is a necessary and functional facilitator to their learning and enjoyment needs. Quantitative data show that the development of audiovisual plot is directly proportional to the increase in the time of enjoyment. In the study, this aspect is confirmed by the progression of the phases of enjoyment, i.e. the progressive change of phase corresponds to the development of familiarity and understanding of the film. Consequently, the improvement of children performing in different modes of audiovisual enjoyment indicates that the fruition with AD and integrated use were preliminary and functional to experience of understanding and enjoying, which improves and increases in relation to the development of the film plot and the time of use. This data is also confirmed by perception analysis: children have the ability to capture and recall the key ideas of the film plot (characters, settings), identifying the structure of storyline (cause-effect niches, beginning, development, and conclusion of plot). The third hypothesis is also confirmed: data analysis shows that the different ways of enjoyment have allowed to all children to live an "unusual" experience to promote, by means of identification and simulation, multisensoriality and inclusion at school. Pupils have used visual and auditory memory systems, using to a multi-sensory memory equipment. Unusual enjoyment in the dark has allowed acting

on classroom management, intervening in lowering the level of competitiveness and conflict, on the sense of membership to the group, on empathy and active listening, on the promotion of prosocial and assertive skills and on common space management and elimination of sensory and physical barriers (noise, classroom disorder). The research experience show that the use of AD in learning context is an opportunity of growth and education for everybody: AD employment is a good didactic communicative strategy that gives importance to memory, languages' functions and meanings' reconstruction through listening.

References

Braun, S. (2008) Audiodescription research: state of the art and beyond. *Traslation studies in the New Millennium 6*, pp. 14-30.

Calvani A. (Ed.) (2011). *Principi di comunicazione visiva e multimediale. Fare didattica con le immagini.* Roma: Carocci.

Carretti B., Cornoldi C., Caldarola N., Tencati C., (2013). *Test CO-TT scuola primaria. Comprensione Orale - Test e Trattamento*. Trento: Erickson.

Clark R. C., Lyons C. (2010). *Graphics for learning: Proven guidelines for planning, designing, and evaluating visuals in training materials*. San Francisco, CA: Pfeiffer, 2010.

Fiorucci A., Pinnelli S., (2013). Audio descrizione e disabilità visiva. *Italian Journal of Special Education For Inclusion*, *1*(1), pp. 133-147.

Kirchner C., Schmeidler E. (2001). Adding audio description. Does it make a difference? *Journal of Visual Impairment and Blindness*, *95*(4), pp. 197-212.

Kleege G., Wallin S. (2015). Audio Description as a Pedagogical Tool, *Disability Studies Quarterly. 35*(2).

Pinnelli S., Fiorucci A. (2015). Giving voice to images: audio description and visual impairment. Technological solutions and methodological choices. In B. Andò, P. Siciliano, V. Marletta, A. Monteriù (Eds.) *Ambient Assisted Living. Italian Forum 2014* (pp. 347-356). Switzerland: Springer Publishing.

Szarkowska A. (2011). Text-to-speech audio descript ion: towards wider availability of AD. *The Journal of Specialised Translation*, 15, pp. 142-162.

WHO (2001). *International Classification of Functioning, Disability and Health*, Geneva.

INTERNATIONAL TELECOLLABORATIVE PROJECT-BASED LEARNING FOR CULTIVATING GLOBAL COMPETENCE

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Abstract

The current wide availability of social media and cloud-based collaborative tools make it possible to have project-based collaborative learning among students regardless of their geographical locations. The benefits of such technology-mediated collaborative learning (i.e., telecollaborative learning) have been well discussed. International communication and collaboration skills are essential competence to acquire today, and so is global competence and cultural awareness. Although the importance of fostering such competences has been discussed in various literatures, rarely discussed is the actual method to cultivate it. There are many issues need to be considered with regards to international project-based collaborative learning, especially when that is conducted involving more than one class/institution. In this paper, the authors' observations and the results of trials and errors in the ongoing joint class project in the past 10 years which connects students in Japan and students in Hungary are shared. In this joint class project, students who enrolled in Introduction to Media Communication at Kanda University of International Studies (KUIS), Japan, and students who enrolled in Japanese Studies at Karoli Gaspar University (KGU), Hungary, form small groups and collaborate to create a presentation on a topic of their selection which intends to compare and contrast Japanese and Hungarian cultures and societies. The Japanese students and Hungarian students communicate and interact with one another in Japanese as well as English when necessary, using Facebook, Facebook Messenger for communication and networking as well as Prezi and Google Drive for collaborative thinking and authoring mutually negotiated and accepted knowledge products (presentations). The final products of the student-centered international collaborative project are online presentation slides with students' audio narration. For the goal of creating such a presentation, students brainstorm, discuss, exchange information, and collaborate among group members at a distance. There are many aspects in the project that have the potentials for assessing individual student's performance as well as group performance. The instructors assessed student performance in the project in the following three constructs: 1) the level of participation of the student in the project manifested in the number of online postings that are observed by the instructors, 2) the quality of the final product evaluated by the instructor as well as the peer students, and 3) the depth of reflection articulated in the essay assigned at the end of the project. The paper describes the authors' 10-year experience of the international joint-class project and makes several recommendations to be considered for those who are planning similar international telecollaborative projects.

Keywords: International joint class, international telecollaboration, project-based learning, global competence.

1. Introduction

The proliferations of information and communication technologies (ICT) and freely available social media and cloud-based collaborative tools spur the imaginations of teaching professionals who desire their students to experience authentic project-based learning which may not be confined to a traditional classroom or classroom settings. They also provide an affordable and accessible means for cross-cultural communication by connecting students from different countries (Commander, Zhao, Gallagher, & You, 2016). The two authors, one based in Japan and the other based in Hungary, first met in December 2007 and started to incubate the idea of having a joint class in which students on both ends communicate and collaborate each other using ICT. The initial objective was to provide students in Hungary who had been studying Japanese with the authentic opportunities to practice their learned foreign language with native speakers and learn more about the country from the people who actually grew up there. On the Japanese side, the objective was to learn to effectively communicate with people with different cultural backgrounds at a distance utilizing ICT tools.

2. Learning design

In each semester, the students who have registered for Media Communication course at Kanda University of International Studies (KUIS) in Japan where one of the authors teaches as an adjunct instructor, and the students who have registered for Japanese Study class at Karoli Gaspar University (KGU) where the other author teaches as an adjunct instructor are formed groups for the telecollaborative project. The group formation is always a challenge as the students composition changes at the beginning of the semester due to the add/drop period of registration. Depending on the number of students registered on each side, we determine the number of groups, each of which has a minimum of two or three students at each end. We've learned over time that it works better forming groups based on their seating position in the classroom as they tend to sit together if they know one another rather than randomly assigning without considering their familiarity among themselves. In this way, at least the group members on one end can have some rapport right away at the start of the project.

As this joint class intends for project-based learning, after initial introductory sessions, each culturally mixed group is asked to come up with a topic of presentation. The students select the topic of presentation, but the topic has to be something in which they can compare and contrast some cultural and societal aspects of both countries. Group members have to communicate to come up with a topic and work on an outline of the presentation, then collaborate with one another to create a presentation file and present online.

3. Challenges

In the following, the 10-year experiences of conducting the cross-cultural joint classes are described highlighting the challenges faced in terms of time, communication tools, collaboration and presentation tools, the language for communication, group communication as well as assessment strategies.

3.1. Time

As we planned to conceive the joint class, we realized several obstacles to overcome before starting the project: firstly, the way to conduct the class. It's not impossible to conduct such a class without any overlapping time, i.e., no synchronous communication between students in Hungary and students in Japan during the scheduled class sessions. However, we knew that it was not motivating for students to take on the projects if they were not given opportunities to communicate synchronously during the class. Actually our 10-year experience has taught us that synchronous communication is very important for motivating students to continue the project even though there have often been the cases that technical problems disrupt the smooth communication and collaboration among the geographically separated group members in the synchronous mode. In order to make the synchronous communication possible, we had to schedule the class time for both Hungarian and Japanese class in such a way that there are some overlapping time between the two classes. Japan is eight hours ahead of Hungary, which makes it very difficult to schedule the two classes to overlap some time. Eventually we could schedule our class time to have some overlap by having the class in Japan at 4:30 p.m., which is the last class on any day, and the class in Hungary at 10:00 a.m., which is the first class on a day. However, another problem had risen; the existence of summer time in Hungary. Hungary has adopted the European summer time while Japan has not adopted summer time, which means that even though we schedule our classes to overlap some time, the situation will change when the summer time starts in Hungary. In fact, we've scheduled our classes to overlap for one hour when Hungary is in the summer time; but then, we lose the overlap time when the summer time ends in Hungary.

Another problem with regards to time was the different academic calendar. In Hungary, the academic year starts in September and ends in early July while the academic year in Japan starts in April and ends in late January. The overlapping periods between the two classes in terms of the academic years are from April to early May for the spring semester and from mid-September to mid-December for the fall semester. Usually we have six weeks of fully overlapping time in the spring semester and 12 weeks of partially (only the first one month) overlapping time in the fall semester. In the spring semester we have good overlapping time and students tend to get very motivated to work on, but we only have six weeks (five class sessions as we lose one class due to a national holiday), which is hardly enough for establishing social rapport and effectively collaborating. On the other hand, we have ample period of 12 weeks with little overlapping time (11 class sessions as we lose one class due to a national holiday), which tends to make the projects winding and not focused.

3.2. Communication tools

From the beginning, we wanted to have our students communicate synchronously as discussed earlier. For that we first used Skype. We also tried different ways to use Skype. For example, at the beginning of the joint class, we used one web camera for the entire class on one end so that students could see how the other class settings look like and how the students were seated in the classroom on the other end. We also used Skype for group communication by having students use one web camera for a group on one end. Although most students have reported this synchronous communication fun and motivating, they also often commented their frustrations due to the frequent technical problems and language issues as well as their uncertainty of proper cultural protocols to effectively communicate with people in a different country. The most frustrating technical factor was that network infrastructure of the classrooms. The network infrastructures of both classrooms are far from optimum and the students often experienced sudden cutoffs or freezes as well as low audio and video quality when communicating via Skype. In addition, the classroom setting is not really ideal for synchronous group video communication during the class as the noises coming from other groups in the same classroom make it difficult to clearly listen to the group members on the other end.

Since 2015, all the newly entering KUIS students in Japan have been asked to purchase iPads and the WiFi infrastructure on campus has been in place, and the technical problem mentioned above has been alleviated to some extent. Now that KUIS students could take the iPad out of the classroom to have a video chat with the students in Hungary instead of depending on the fixed computers in the classroom, which makes it possible to show and tell things outside the classroom though this feature has not been fully explored yet by the students. It's also started to be seen that the students use multiple devices such as smartphones, tablets, and laptop computers to communicate through multi-channels now that all the Japanese students have their own smartphones and iPads; for example, while having a video chat via one device, students can have a text chat or looking up information using another device. Actually, it appears that the more adept students becomes in using multiple devices, the more effective their communication becomes.

Besides synchronous communication described above, the joint class has been utilizing Facebook group for the major platform of communication among the Hungarian and Japanese students. Facebook has been a very familiar platform to both Hungarian and Japanese students though recently the popularity of Facebook among Japanese college students is on decline and most students tend not to use Facebook for communication other than class requirements. It has been a gradual change since 10 years ago when few students in Japan had ever used Facebook and basic features and usage needed to be explained in class before starting to use it for the joint class. In Japan, LINE is the primary tool for informal communication for most people and most Japanese students in this joint class use LINE to communicate outside the classroom.

Formal learning management platforms such as Moodle and Blackboard may be a possibility to use for a class project purpose; however, using such a formal platform beyond the institutional boundary tends to be difficult as such platform is usually adopted by the institution and limit its use to the students registered at the institution where the platform is deployed. Facebook group is a convenient platform for the joint class as everybody can use it regardless of his/her institutional affiliation, while retaining its environment closed only to those who are added as members of the group by the instructors. In addition, becoming members of the Facebook group does not necessitate adding other students in the class as "friends" in order to communicate and share information on the Facebook group page and any communication shared on the group is not shared with "friends" of the members. Facebook is also used to post announcements to all the students by teachers.

At the beginning of every project, each student is asked to post a message introducing him/herself as self-introduction is considered to be a vital initial step for building rapport (Dent et al., 2017; Shadiev, Hwang, & Huang, 2015; Wang, 2011). Before Facebook introduced its video chat feature on its Messenger in 2017, students had to create a Skype account separately and to exchange the Skype IDs among group members in order for a group to have a video chat, which was logistically cumbersome as they have to manage both Facebook and Skype accounts. With the addition of the video chat feature in Facebook Messenger, students no longer had to exchange different IDs and can have a group video chat using their Facebook IDs though in order for them to do that, they have to add the group members as their "friends."

Another useful new feature added to Facebook in 2017 was the ability to stream live video. We used this feature at the beginning of the joint class to show the students in the classroom live so that the students on the other end can get the feel of how the classroom is set up and how the students are doing at the remote site. It is great to have synchronous and asynchronous communication as well as individual and class-wide communication on one platform as we don't have to deal with multiple platforms for different purposes.

Free tools of communication such as Facebook are very useful and the enablers of this kind of international joint class; however, we are always at the mercy of the policies and features of those communication tools, which are constantly changing, and as teachers we have to keep abreast of the latest changes and updates in utilizing those tools effectively without much distraction of unexpected troubles.

3.3. Collaboration/presentation tools

Besides above mentioned communication tools, we also utilized collaboration tools as we assigned students to create a presentation as an outcome of the cross-cultural group project. In this paper, collaboration tools are distinguished from communication tools as the collaboration tools enable people at a distance to work on the same file in addition to exchange messages. The collaborative tools we have used over the course of 10 years are listed below:

Table 1. List of collaboration tools used.

Name	Purpose
Google **Docs or Google Drive**	Google Documents and Spreadsheets have been used by the authors to plan and manage the project throughout the projects. The students mostly used Google Presentation to create a group presentation. Google Forms have sometimes been used to create online questionnaire for students on one end to ask questions to the students on the other end.
Mindmeister	Mindmeister was used to brainstorm potential topics in the topic selection stage in the past. However, most students were not familiar with mind mapping, and the use of this tool never reached the level of actual brainstorming.
Prezi	Prezi is a mind mapping and presentation tool which is very different from the traditional slide-based linear mode of presentation. It was invented in Hungary and has been widely adopted in schools and universities in Hungary. It was used to collaborate on a presentation file. However, its innovative features had been hard to be accepted by most Japanese students. In addition, its mobile app only allows viewing not editing at present, we stayed away from it recently.
Voicethread	For years Voicethread was used to create a final presentation which allowed to convert Google presentation files or PowerPoint files to online presentation completed with voice narrations. It is playable asynchronously and viewers can add comments to each slide. We stopped using it a few years ago as its free account no longer gave a full functionality needed to complete the narrated group presentation online.

3.4. Language for communication

Language tends to be a barrier in international telecollaborative projects or cross-cultural collaboration especially when communicating and collaborating between native speakers and non-native speakers. In this joint class, the main language of communication has been decided to be Japanese so that the students in Hungary who are studying Japanese can practice their Japanese with native speakers while Japanese students can learn to communicate with foreigners in their own mother tongue, for which special care must be paid to use simple and easy-to-understand words and phrases and to communicate clearly with enough explanations. Many Japanese students have commented that it is a learning experience as they usually don't have an opportunity to interact with non-native speakers in Japanese because they usually assume communication with foreigners to be conducted in English. Most of Japanese students commented the uncertainty of communicating in Japanese as they were not sure if they could communicate whatever they intended to communicate to the students in Hungary.

The use of English is supplemented when the both parties feel communicating only in Japanese will hinder the progress of their project. English is an equal language for both Hungarian and Japanese students as it is a foreign language for the students of either nationality though proficiency of language differs greatly depending on the student.

3.5. Small group communication

In international telecollboration, group formation is another very important factor determining success of the project. Wang (2011) and Kim (2013) noted that small group size with two to three students were preferred as it allows for more interaction among group members. Effective grouping has been a challenge in this joint class as the number of registered students change semester to semester and sometimes there is a big difference in the number of students in Hungary and in Japan. We try to form a group of 5 to 6; 3 to 4 students in Japan teaming up with 2 to 3 students in Hungary. Not only the number

of members in a group, but also the personalities and language (Japanese and English) proficiency of the group members also significantly affects the effectiveness of communication and usually the experiences each student has varies significantly depending on the dynamics of the group he/she belongs to.

Another important factor in the success of small group communication is the leadership. If a leader naturally emerges, the group's communication tends to go smoothly. However, Japanese and Hungarian students tend to be reserved in initiating communication as both cultures value not sticking out in the crowd. Also, motivational differences become an obstacle to a successful collaboration as students range from those who just want to pass the course with minimal involvement to those who are driven to excel. Even though some students are individually motivated in the class, some of them are not competent in collaborating with other students as such opportunities are rare in a formal educational environment.

3.6. Assessment strategies

Assessment strategies affect the motivation of the students. In this joint class, two instructors independently evaluate students as different institutions have different grading policies. In the KUIS class, assessment on this telecollaborative project was divided into two parts: group evaluation and individual evaluation. As for the group evaluation, one class session is dedicated for the viewing of final group presentations in the classroom and each student evaluates the presentations that were made by groups other than their own on the evaluation criteria specified by the instructor. The students are also asked to evaluate members of the same group in terms of their leadership, contribution, and teamwork.

As part of the individual assignments, the students are asked to write personal reflections on the telecollaborative experiences after the project is finished. The guiding questions for reflection are: "Did you participate in the project proactively? If so, how? If not, why?"; "What have you learned or gained in the project?"; and "What do you think is important to make such an international telecollaborative project a success? The instructor evaluate the assignments based on the depth of their insights in the process.

4. Conclusions

The 10-year case study of connecting students in Hungary and Japan has taught us many lessons some of which have been discussed in this paper. However, the most critical factor is the collaboration between the instructors on both sides. Needless to say, details need to be worked out in advance, but the most critical is the flexibility to solve problems as they arise. There are so many factors that may not work according to the plan when technologies and live human beings are involved. The key to success in this kind of joint class may be the instructors' readiness to respond to unexpected situations in a positive manner by turning unexpected incidents into learning experiences.

References

Commander, N., Zhao, Y., Gallagher, P., & You, Y. (2016). Cross-national online discussions: international learning experiences with American and Chinese students in higher education. *Innovations in Education and Teaching International*, 53(4), 365–374.

Deng, L., Chen, YH. & Li, S.C. (2017). Supporting cross-cultural online discussion with formal and informal platforms: a case between Hong Kong and Taiwan, *Research and Practice in Technology Enhanced Learning*, 12: 5. https://doi.org/10.1186/s41039-017-0050-z

Kim, J. (2013). Influence of group size on students' participation in online discussion forums. *Computers & Education*, 62, 123–129.

Shadiev, R., Hwang, W.-Y., & Huang, Y.-M. (2015). A pilot study: facilitating cross-cultural understanding with project-based collaborative learning in an online environment. *Australasian Journal of Educational Technology*, 31(2), 123–139.

Wang, C. M. (2011). Instructional design for cross-cultural online collaboration: grouping strategies and assignment design. *Australasian Journal of Educational Technology*, 27(2), 243–258.

OPEN CONTENT, OER REPOSITORIES, INTERACTIVE TEXTBOOKS, AND A DIGITAL SOCIAL PLATFORM: THE CASE OF GREECE

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Abstract

Open digital educational content is a key priority of the Greek national K-12 educational policy. "*Digital School I*" national initiative (2010-2015) resulted in 7,500 Open Educational Resources (OERs); 100+ open, interactive textbooks; a modern digital repository infrastructure (*Photodentro*) for hosting, organizing, and sharing K-12 OERs, along with a national educational content Aggregator service and portal for harvesting and providing seamless access to externally hosted OERs; and a social educational platform for pupils and teachers (*e-me*). The paper presents the current status in Greece regarding K-12 digital educational content and e-services, in line with the Greek K-12 digital policy, and the new nation-wide program *"Digital School II"* (2017-2018) that extends and upgrades the current infrastructure.

Keywords: OERs, K-12 digital educational content, national strategies, repositories, digital platforms.

1. Introduction

Over the past few years there has been an increased interest for high-quality open educational resources (OER) in K-12. OERs (i.e. teaching, learning and research materials of any type, which are either in the public domain or released with an open copyright license (UNESCO, 2012)), are more and more recognized as an important component of educational policies. Many national and international initiatives are promoting the creation and sharing of OERs. The trends and implications of open content for learning and education are discussed in (Geser & Schaffert, 2017).

1.1. The Greek national policy for digital educational content

Digital educational content is a key priority of the Greek national digital educational policy for primary and secondary education, which is reflected in the design of national programs for ICT in K-12. From the first nation-wide pilot program for integrating ICT in all school subjects that was implemented in Greece back in 1996-2001 (Hatzilacos et al, 2001) and the large-scale national project that followed for localizing international educational software products to the Greek educational system (1998-2004), up to the first major national effort to develop Greek educational software and digital content (2001-2008) by involving both K-12 teachers and the Greek software market, considerable experience has been gained for the establishment of a *National Policy for Digital Educational Content.* Following the directions of the 2020 digital agenda of Europe and the international trends, the key action lines of the *national policy* are:

(1) Promotion of Open Educational Resources (OERs): all teaching and learning resources of any type that are developed with public funds should be publicly accessible resources for any user, to use, re-mix, improve and redistribute under the Creative Commons license;

(2) Fostering re-usability: the development of *Learning Objects,* i.e. small, self-contained, reusable OERs that are semantically and functionally autonomous (Wiley, 2000) is highly recommended;

(3) Easy access to OERs: the development *of a modern digital infrastructure and e-services* to promote learning, to reduce social inequalities, and to foster social inclusion is a priority;

(4) Supporting the role of teachers and pupils as content creators: teachers and pupils are encouraged to use openly licensed materials and to have an active role in the creation of OERs.

1.2. The "Digital School" Greek national initiative

Digital School is the Greek national initiative for the digital transformation of K-12 education. Following a holistic approach, the initiative addresses all major aspects for effectively integrating ICT in the Greek state school system. Launched in 2010 by the Ministry of Education (MoE), it funded programs

in five pillars (Figure 1). *Digital educational content* is one such pillar; in-service *teacher training* and the *digital classroom* (classrooms equipped with interactive teaching systems and supported by a nation-wide school network), are the other two pillars, both strongly linked with the provision of digital content. *Horizontal support actions* and *electronic administration platforms* complement the group of pillars.

Figure 1. Digital school Greek national initiative pillars - digital educational content & e-services.
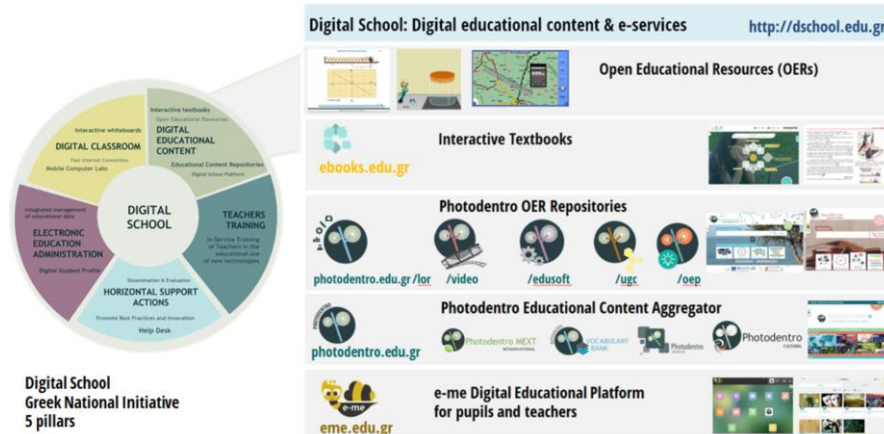
1.3. Digital Educational Content within the Digital School National initiative

The *"Digital School Platform, Interactive Books, and Learning Object Repository (Digital School I for short)"* (*http://dschool.edu.gr*) is a flagship program that implemented the digital educational content pillar from 2010 to 2015. The whole program was coordinated and realized by CTI, in our capacity as the technical organization supporting the Greek MoE. With a total budget of 8,7 million euro, the program involved more than 200 qualified teachers, pedagogical and domain experts, and academic professors, and around 80 engineers and technical personnel. The program was distinguished as best practice, as it ranked 4th among all projects funded by the European Social Fund in Greece for that period.

The new national program *"Digital School II: Expanding and Exploiting the Digital Educational Platform, the OER Repositories and the Interactive Text Books"* is a continuation of the previous one for the period 2017-2018 (funded by Greek NSRF 2014-2020). The rest of the paper describes the current infrastructure in Greece regarding open digital educational content for K-12 education (section 2); open interactive textbooks (section 3); digital OER Repositories (section 4); an Educational Aggregator (section 5), and a social educational platform for pupils and teachers (section 6) as a result of the Digital School I program; Section 7 focuses on the next steps, giving an overview of the Digital School II project.

2. Open Educational Resources (OERs) & Learning Objects

Since 2011, the *Digital School* community of 200 qualified teachers, working in 12 scientifically supervised domain-specific groups, has developed and maintained *7,500 open, reusable Learning Objects* (Figure 2), covering a wide spectrum of areas and educational objectives of primary and secondary education, including Mathematics, Physics, Chemistry, History, Geography, Foreign Languages, Religious Education, and Aesthetic Education; another 1,500 OERs were extracted out of existing educational software products. Most learning objects are "click-and-play". Learning resource types include simulations, visualizations, interactive maps, exercises, timelines, educational games, etc.

Figure 2. Examples of open, reusable learning objects.

3. Open textbooks, interactive textbooks, and the e-books portal

Open textbooks: All textbooks for K-12 education (~300) are openly provided online in various open digital forms, either pdf or editable html that resembles their printed version.

Enriched textbooks with multimedia, interactive learning resources: More than 100 textbooks

have been enriched with click-and-play OERs (Figure 3b). Linking OERs within textbooks' html proved to be a good, alternative approach for associating digital resources with learning goals of the curriculum, offering in addition a familiar browsing interface for teachers and pupils to navigate through learning resources. This was feasible in the centralized Greek educational system, as there is only one official textbook or set of textbooks for each lesson, published centrally by the MoE's publishing organization.

Figure 3. a) e-books portal and b) examples of enriched, interactive textbooks.

The *e-books portal (e-books.edu.gr)* (Figure 3a) is the official portal of the Greek MoE for hosting and delivering all digital forms of textbooks to pupils, teachers, parents, and the general public. It is open to everyone, while all textbooks are provided for free for non-commercial use. The portal has more than 600.000 unique visitors per month. It has also support for deaf, blind or partially sighted users.

4. The Photodentro national digital repository infrastructure for K-12 resources

The most significant part of the Greek national infrastructure for K-12 educational content is the *Photodentro* ecosystem of five (5) OER digital Repositories, each one serving a different purpose. *Photodentro* provides the *digital infrastructure for hosting, organizing, and allowing easy access to OERs*, with a strong emphasis on *open access*, thus implementing the Greek national strategy for educational content. All resources are freely available to everyone under the CC BY-NC-SA 3.0 license. Three Photodentro repositories host certified or curated content (only authorized users can publish there):

(1) Photodentro LOR (photodentro.edu.gr/lor) hosts *Learning Objects* for K-12 education, covering a wide range of disciplines and grades (Megalou & Kaklamanis, 2014). Current collections count ~9.000 learning objects developed mainly by the *Digital School* community.

(2) Photodentro Video (photodentro.edu.gr/video) hosts short length, curriculum-related, and suitable for in-classroom use, educational videos. Current collections count ~1000 videos, including Greek educational TV productions, documentaries, and student videos that won in various contests.

(3) Photodentro EduSoft (photodentro.edu.gr/edusoft) hosts standalone educational software.

Figure 4. Photodentro LOR: a) home page; b) browsing by learning resource type; c) list of results.

Two more repositories are provided for hosting teacher-generated content: *(4) Photodentro UGC (photodentro.edu.gr/ugc),* where teachers upload and share their own OERs, and *(5) Photodentro OEP (photodentro.edu.gr/oep),* for sharing Open Educational Practices (OEPs), i.e. innovative, reusable teaching techniques that draw upon OERs; OEPs include results, experiences, and reflections. A public profile is required for teachers in order to upload OERs and OEPs. A support action (*i-participate.sch.gr*) and an annual national contest on K-12 OEPs have been established to boost the use of OERs.

All *Photodentro* repositories support browsing, free text search, and faceted search, allowing users to narrow search results by applying multiple filters (Figure 4). Their implementation is based on DSpace (*dspace.org*), an open source platform for building digital repositories. They all provide an Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) target and they fully support the IEEE LOM specification for standards-based description and exchange of metadata of educational resources.

Photodentro SaaS: The recently launched *Photodentro SaaS* initiative drives the expansion of the Photodentro ecosystem of OER repositories. It is based on the *Software as a Service* model (SaaS), allowing for all interested organizations to implement a *Photodentro* repository to manage their objects.

5. The Greek National Educational Content Aggregator & support sub-systems

The Greek national infrastructure for K-12 educational content includes also the *Photodentro Greek National Aggregator & portal*. The *Photodentro portal (photodentro.edu.gr)* serves as the focal access point to all OERs targeted to the Greek school community. It currently provides seamless access to 17.500 OERs, from 15 repositories and 17 content providers. The *Photodentro Aggregator* is the national service for harvesting and accumulating educational metadata from various, external OER repositories and collections (museums, audiovisual archives, etc.). In order to ensure quality of metadata, all learning resources from external repositories are aligned and enriched -if needed- with educational metadata, according to the *Photodentro IEEE LOM GR Application Profile*. *Photodentro MEXT* is the intermediate system that supports the Photodentro Aggregator service, providing a metadata authoring environment for the selection and annotation of aggregated digital resources with additional metadata.

Figure 5. a) Photodentro aggregator architecture and b) metadata enrichment process of external collections.
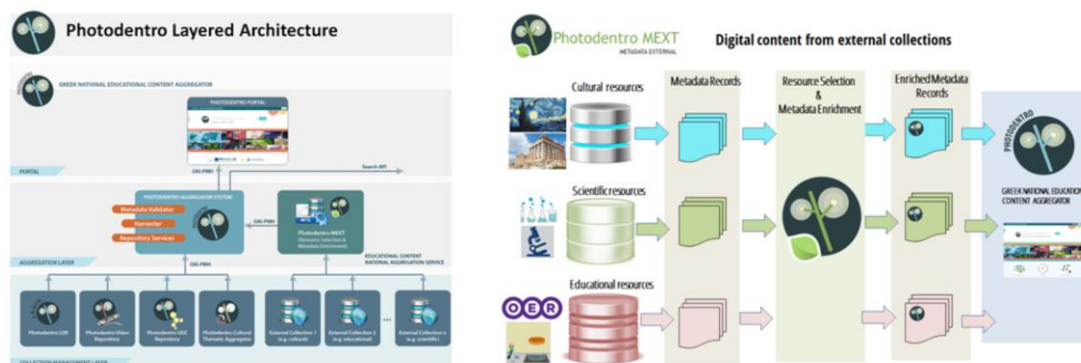
Photodentro Cultural (photodentro.edu.gr/cultural): it is a result of a harvesting process and it operates as a thematic aggregator for cultural OERs; 200,000 resources of Europeana collections (*www.europeana.eu*) have been harvested, 6,700 objects of which have been selected and enriched with educational metadata by 100 teachers, who highlighted their educational value, by classifying them into the K-12 curriculum goals, topics, age range etc., and by providing guidelines for their pedagogical use.

The *Photodentro* infrastructure includes also support systems, among them:

o *Photodentro microsites:* A microsite is a light-weight, individual web site that supports certain views of the Photodentro portal aggregated content. A mechanism to easily build *microsites* on Photodentro aggregated content has been developed along with a microsite instance for English Language resources *(micro.photodentro.edu.gr/english2015)*.

o *Photodentro Vocabulary bank (vocbank.photodentro.edu.gr/)* is a web based environment to manage taxonomic schemata (controlled vocabularies and taxonomies) that implements a single point of reference for all sets of vocabularies of *Photodentro IEEE LOM GR Application Profile*.

o *Photodentro Quality Seals* is a new repository of the Photodentro family to support a quality assurance scheme for its content based on *Quality Seals*. A *Quality Seal* can represent either a process, or a set of evaluation criteria, or a brand name. The repository hosts and manages Quality Seals, stamping records for OERs, while it has a Registry of Certifiers.

6. The Greek digital educational platform (e-me)

e-me is an open, safe social digital educational platform for pupils and teachers in primary and secondary education, offering strong support for sharing files and apps (Megalou et al., 2015). It has been designed and implemented by CTI to serve as the main digital working space for 1,000,000 pupils and 120,000 teachers of the Greek K-12 community.

There is a plethora of Learning Management Systems (LMSs) developed so far; *Moodle* (*moodle.org*) is among the most popular open source ones, however, it imposes a steep learning curve for the end-user. Edmodo *(www.edmodo.com)* free social platform is a widespread example of next generation LMSs. Personal Learning Environments (PLEs) have emerged to provide easily customizable learning environments and multi-sourced content. *e-me* is an open source implementation of a PLE.

It is known that software become obsolete very quickly; thus, when developing infrastructure with public funds, competing with the market is not a sustainable model. *e-me is based on a sustainable model for growth and extension*. Efforts focused on the development of the underlying "framework", providing an extendable platform ready to host third party applications, allowing therefore pupils and

teachers to use tools that are familiar with. Sensitive data and apps reside in regulated and controlled infrastructures, while the sustainability model encourages the software market and the educational community to contribute with apps that extend its functionality.

e-me has a user-centered approach, where "pupil" is at the center. It implements a social learning environment with a modern and intuitive user interface, where all pupils and teachers can safely share content, connect and collaborate with peers, publish their work, use a large number of embedded apps, and interact with a wealth of open educational resources. A key structural concept of the *e-me* world is that of "hives", which accommodate smaller, self-contained social, regulated learn-places. *e-me* provides personal file space on the cloud; e-portfolio; blogs; messaging; tools for content development; a personal repository for OERs; and a variety of apps to support both formal and informal learning experiences.

Figure 6. e-me, the Hellenic digital educational platform for pupils & teachers.

7. Next steps: The Digital School II Greek National program

The new nation-wide program *"Digital School II: Expanding and Exploiting the Digital Educational Platform, the OER Repositories and the Interactive Textbooks"* (2017-2018) updates, extends, enriches and upgrades the above educational services. Some hundreds of new OERs are being developed, covering new disciplines and K-12 curriculum goals, including pre-primary education and vocational education; the successful model of involving qualified in-service teachers in the OER development process continues; particular emphasis is given to metadata quality for effective search and retrieval of OER resources, by establishing a central service for continuous metadata curation; the *e-books portal* is being upgraded to a modern standards-based Photodentro-like repository for interactive textbooks, including an advanced search mechanism to allow search within book texts; the Photodentro OER Repositories expand following the Software as a Service (SaaS) model; the Photodentro Aggregator national service is launched, inviting content providers to get connected; harvesting of new collections and repositories is envisaged; the *Quality Seals* repository and service is launched as well; the e-me social platform evolves and operates on a large scale, while the educational community is invited to participate with ideas for *e-me apps* adding new functionality; existing functionality is improved, while new is added, including synchronous communication, blogs, assignments and a content development tool.

References

Geser, G. and Schaffert, S. (2017). *Open Educational Resources: Features, Trends and Implications.* Retrieved 5/01/2018 from https://ercim-news.ercim.eu/en71/special/open-educational-resources-features-trends-and-implications

Hatzilacos, Th., Kynigos, C., Vavouraki, A., Ioannidis, Ch., Papaioannou, P., Psycharis, G. (2001). *A Case Study of ICT and School Improvement*, https://www.oecd.org/greece/2737919.pdf

Megalou, E. & Kaklamanis C. (2014). Photodentro LOR, the Greek National Learning Object Repository. *Proceedings of INTED2014.* Publisher: IATED. (pp. 309-319).

Megalou, E., Koutoumanos, A., Tsilivigos, Y., Kaklamanis, C. (2015). Introducing "e-me", the Hellenic Digital Educational Platform for Pupils and Teachers. *Proceedings of EDULEARN15.* (pp.4858-4868). Also available at http://dschool.edu.gr/p61cti/promotion/publications/

UNESCO, World OER Congress, Paris. (2012). *What are Open Educational Resources (OERs)?*. Retrieved 5/01/2018 from http://www.unesco.org/

Wiley, D. A. (2000). *Getting Axiomatic about Learning Objects*. Retrieved 5/01/2018, from http://reusability.org/axiomatic.pdf

COLLABORATIVE ONLINE INTERNATIONAL LEARNING

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Abstract

The State University of New York's COIL program (Center for Collaborative Online International Learning) offers faculty training that models characteristics of quality online learning environments. Training sequences learning activities, moving from socialization, to comparison and analysis, to collaboration. Reflective activities are infused throughout. By applying this approach, courses linking students from different countries have successfully fostered awareness of new cultures as well as heightened awareness of one's own.

Keywords: Online, international, collaborative learning.

1. Introduction

The State University of New York's Center for Collaborative Online International Learning (COIL), initiated in 2006, 1 is committed to developing learning experiences that foster student awareness of other cultures. According to Guth and Rubin (2016), COIL focuses "on student-to-student interactions to promote:

- Awareness and knowledge about other cultures and realities
- Understanding of how others perceive us (and why)
- Understanding and awareness of each person's own cultural background
- Experiential and collaborative student learning
- Competency in using English (or other languages) in authentic communicative contexts
- Development of online communicative competence and digital literacy
- Experience in working in virtual teams
- Opportunities to build diverse personal relationships."

In order to support achieving these learning outcomes, COIL's faculty training focuses on developing faculty as well as student cultural awareness. Guth and Rubin (2016) state that "the COIL model aims to create equitable team-taught courses where teachers from two cultures work together to develop a shared syllabus, giving new contextual meaning to the ideas and texts they explore." Academic creativity results from the way COIL models and applies collaborative course development processes for faculty who, in turn, apply collaborative concepts to develop student learning activities that promote cultural awareness.

2. COIL faculty training

Training from COIL focuses on moving faculty through sequenced activities. Training starts with asking partners to interview and introduce one another to the training group, before working in pairs to gather information about one another's students, courses, technology, and institutional cultures and expectations. Additional introductory activities may occur, such as collaborative story writing, or sharing information about three course "dreams" and three course "nightmares." All introductory activities are designed to foster a sense of collaboration. After connecting on a personal level, training progresses to introducing faculty to one another's cultures through the context of holidays that occur during the term in which the collaborative course will be taught. This particular context is used not only to develop some cultural insight, as with a discussion and comparison of holiday traditions, but also to generate ideas for course assignments using events or images that can help students focus on commonalities and differences between cultures.

Training then moves more fully into course development. Faculty partners are asked to brainstorm and develop learning goals and outcomes, identify the learning activities that will be used to achieve those

goals and outcomes, and consider how to scaffold those activities. Only after learning outcomes and activities have been established are the faculty then asked to choose tools for online delivery of those learning activities.

Throughout the training, faculty partners are expected to maintain observation logs and summarize their reflections at the end. Training is timed; it exists as a course, with scaffolded modules, assignments, and required discussions, modeling concepts of good online course design.

3. COIL course design

COIL faculty training is designed to facilitate the development of courses and/or portions of courses that meet the expectations of the Quality Matters Rubric (2014), which emphasizes alignment of learning objectives, learning activities, and instructional materials that help the learner achieve the learning objectives. The training itself adapts Salmon's model for successful online course design, one of many models that stress socialization first, before moving into information gathering, knowledge construction, and finally development or application of knowledge in broader or additional contexts.

Applying these design concepts, COIL courses offer an "icebreaker" first, something that allows students to get to know one another. In many courses, the icebreaker is a simple introductory discussion, one that asks students to offer some information about themselves, their academic focus, their hobbies or interests, and their location. In other courses, the icebreaker might ask students to respond to images that represent the two cultures, not only describing but evaluating the images as a way to start considering the cultural lenses that color our interpretation. Courses then move more fully into course content, which leads to students comparing and contrasting their insights about history, business management, creative writing, food and culture, governments, social issues – whatever constitutes the content focus of the course. Through carefully-designed learning activities and discussions, students interact with one another in examining both course content and their respective insights into or reactions to that content, depending on their cultural context. Learning activities and discussions are designed to get students to collaborate with one another, in a way conducive to learning the course content.

Reflective activities occur both throughout and at the end of the collaboration, with specific questions designed to help students summarize the results of the interaction and consider their insights about both their own and another culture.

4. Two specific examples

4.1. Applying the design: Writing across cultures

One example of a COIL course was a seven-week collaboration between students of SUNY Empire State College and the American University of Technology in Beirut, Lebanon. The collaborative weeks occurred in two different courses, Creative Nonfiction (U.S.) and Current Issues in Journalism (Lebanon), but shared the same learning outcomes for those weeks, outcomes which focused on developing a fuller understanding of another culture, evaluating media representations of that culture, and comparing/contrasting media representations with the student's evolving personal understanding of that culture. To work toward these learning outcomes, learning activities included the following:

4.1.1. Icebreaker / socialization (3 weeks). Icebreakers included a real-time Zoom introductory session and an asynchronous introductory discussion. Although both institutions used the same course management system, the collaborative activities for this particular course took place in a secret group in Facebook, chosen as "neutral" territory, available and easily accessible to all students. Socialization was fostered by pairing and asking students to develop at least 5-10 more questions to ask their partners about themselves. Each student then completed a written portrait of his/her partner to share with the partner first, and then with the larger group.

4.1.2. Comparison and analysis (2 weeks). Students were asked to post an image or a series of images of a local place important to them, which could be their home, an image of their town or locality, or a special place they liked to visit. As a large group, they questioned one another about their places – where the place was, what made it interesting, what might be interesting to others who have never experienced the place, images-sounds-smells associated with the place. In discussion, students were asked to compare and contrast their places and analyze similarities and differences. This learning activity resulted in an essay describing the place, written to help others who have never experienced that place understand more about it.

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4.1.3. Collaboration (2 weeks). Learning activities during the last two weeks of the collaboration asked the students to move from a personal to a broader context. They read articles about representation of the U.S. and Lebanon in the media. They discussed media images of the countries, and how those images compared to the images they developed personally based on their partner interviews and descriptions of place. They were asked to identify what they think is misunderstood about each culture, as well as what surprised them about the culture, and what was different than they expected. A final reflective activity asked students if they came into the collaborative activities with any of the stereotypes that the media representations identified, what they learned about each others' cultures, how they would portray each others' culture now, and what insights they gained about their own society and culture as a result of the collaborative experience.

Students' insights were generally positive, with final reflections focusing more on human similarities than differences, especially regarding family affiliations, and on what students learned about some values and traditions from the partner culture.

4.2. Representative student observations: The science of cooking and stories of food and culture

Another successful collaboration combined students in two different courses from the same institutions, The Science of Cooking (ESC) and Stories of Food and Culture (AUT). The Science of Cooking included adult U.S. students of both genders in a fully-online science course with a focus on the chemistry of food. The course did not focus on any special cuisine (e.g., regional U.S. cooking was not acknowledged). Stories of Food and Culture (AUT) included traditionally-aged college students of both genders in an online course with a residency component. This course focused on literature about food. Students collaborated in shared discussions across two course templates. The discussions involved sharing their knowledge of a defined cuisine (Lebanese/Middle Eastern/French) for the Lebanese students, while American students sometimes typified U.S. cuisine as "fast food" although many could identify family dishes or recipes from various regional cuisines around the United States of America.

Observations from the students in this collaboration represent the experience of many students in COIL courses:

"I had always loved being in contact with people from different countries so I can learn about different cultures and lifestyles….It was nice to know about how people live, eat and do daily activities in the other side of the earth. What I loved most in their honesty that we rarely find it here. I certainly encourage these types of interactions."

"Yes I won a lot with this exchange we know America by what we believe, what we can see, read, hear but in fact we do not know Americans. Many stereotypes are glued to some nations and communication is what is best to make up his own mind. For example in the field of food it was the idea of fast food and I found the interest of students for cooking made with love."

"I take away a new way of learning in which 2 different cultures share different opinions and ideas about a topic and the most important thing: we respected each other."

5. Strategies to foster collaborative online international learning

Basic strategies that support international collaboration include the following:
• Use visuals as much as possible – of the students, their locations, their activities
• Find a human commonality appropriate to the course to foster interaction (e.g., share information about internet availability, food)
• Use a communication medium easily accessible to most students
• Confront cultural preconceptions directly, in response to a 3rd party text or video
• Do individual pre- and post-collaboration reflections

Basic strategies such as these are verified through both experience and research studies, e.g., Wang's (2011) study on instructional design for cross-cultural collaboration, highlighting the need to "develop a sense of learning community," "design multimedia assignments," and "cherish the differences."

Every collaboration has its issues, such as dealing with different time zones, bad digital connections, different digital preferences and, above all, different cultural expectations. But despite those issues, carefully designing courses to move from personal, to comparative, to analytical and reflective work can help to create a successful learning experience for collaborative, online, international learning.

References

A Brief History of the SUNY COIL Center. (n.d.). Retrieved January 31, 2018, from http://coil.suny.edu/page/brief-history-suny-coil-center

Guth, S., & Rubin, J. (2016, June). *Stevens Initiative Workshop*. Address presented at Stevens Initiative Workshop in Lebanon, Beirut.

Quality Matters. (n.d.) Retrieved January 31, 2018, from https://moodle.esc.edu/pluginfile.php/2388906/mod_page/content/29/QM%20Standards%20with%20Point%20Values%20Fifth%20Edition.pdf

Salmon, G. (n.d.). The Five Stage Model. Retrieved January 31, 2018, from https://www.gillysalmon.com/five-stage-model.html

Wang, C. (2011). Instructional design for cross-cultural online collaboration: Grouping strategies and assignment design. *Australasian Journal of Educational Technology, 27*(2), 243-258. Retrieved January 31, 2018, from https://ajet.org.au/index.php/AJET/article/view/968/242.

COUNTRIES AFFLICTED BY VIOLENCE AND ANOMIE IN NEED OF A REVISED APPROACH TO CITIZENSHIP EDUCATION

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Abstract

Many countries around the world suffer from violence and anomie. South Africa is no exception. It is argued that while Citizenship Education should have an international or global aspect in view of the fact that most individuals have today become world citizens, it should also contain materials that would help learners / students to be formed in such a manner that violence and anomie could be eradicated in their respective home countries. Moral education should be pertinently and more comprehensively included in school curricula, particularly in the more advanced grades. Measures should be taken to keep as many children in school in order for them to be exposed to moral education offered as part of Citizenship Education.

Keywords: Anomie, citizenship, citizenship education, moral education, globalisation.

1. Introduction

This presentation consists of four parts, namely an outline of the problem to be considered, a discussion of the possible root of the problem, four contentions regarding the problem, and a conclusion.

2. The problem

Many countries around the world are today being afflicted by violence and anomie (a lack of the usual standards of acceptable behaviour). Violence and anomie prevail worldwide, such as the attacks in Paris on Charlie Hebdo, the travel of jihadists from the West to Syria and Iraq as well as problems in Europe and violence elsewhere associated with refugees from countries in conflict (Miedema & Bertram-Troost, 2015: 47). Other problems that crop up on a worldwide scale are injustices aimed at specific target groups such as minorities, refugees, marginalised groups and stateless people. Many of these groups suffer differential exclusion, stereotyping, stigmatisation, discrimination or xenophobia (Banks, 2008: 132-134). Henderson (2013) and the United States Department of State Bureau of Democracy, Human Rights and Labor (2014) offer a catalogue of immoral acts and behaviour all over the globe. Such immorality and anomie is also rife in South Africa, as will be discussed below.

The problem of immoral behaviour and anomie has also reared its head in schools. In 2012, one in every five South African learners experienced some form of violence in school (Burton & Leoschut, 2013: xii). According to Power (2017: 300), various forms of violence and anomie occur in schools on a regular basis, among others abuse, assault, bullying, corporal punishment, gangs, gender-based violence, harassment, injury, initiation, rape, sexual harassment and sexual violence. In 2014/15, the South African Council of Educators received 86 complaints of verbal abuse, victimisation, harassment and defamation; 161 complaints of unprofessional conduct, alcohol abuse and absenteeism; 94 of sexual misconduct and rape; 253 of corporal punishment (all these complaints were in regard to educators, the very people who should have guided their learners to higher levels of moral behaviour). In the same period, 13% of learners complained of bullying in schools, 14% reported threats of stigmatisation; 13% complained of being forced into doing wrong deeds; 12% were threatened with violence, 6% were assaulted; 5% were sexually assaulted or raped, and 4% were robbed at school.

It is clear from the above, that many countries around the world, including South Africa, are currently suffering from a moral problem.

3. The root of the problem

South Africa, like other countries that have experienced radical political transformation, experienced a "honeymoon period" that lasted from around 1994 when the struggle against apartheid ended, to around 2009. Analysts agree that the country has now lost the relative political, social and moral stability characteristic of Nelson Mandela's term of office as President. Mandela's term in itself was not without moral problems, however. Shortly after taking office as President of South Africa (1997), he declared: "Our hopes and dreams, at times, seem to be overcome by cynicism, self-centredness and fear. The spiritual malaise sows itself as a lack of good spirit, as pessimism, or lack of hope and faith. And from it emerge the problems of greed and cruelty, of laziness and egotism, of personal and family failure. It both helps fuel the problems of crime and corruption and hinders our efforts to deal with them." In the following year (1998), he declared: "The symptoms of our spiritual malaise are only too familiar. They include the extent of corruption both in the public and private sector, where office and positions of responsibility are treated as opportunities for self-enrichment; the corruption that occurs within our justice system; violence in interpersonal relations and families; in particular the shameful record of abuse of women and children; and the extent of tax evasion and refusal to pay for services used." In 2000, the President, Vice-President and the Deputy Minister of Education also expressed "deep concern about the worsening moral situation" in South Africa (Moral Regeneration Movement, 2018).

As mentioned, the moral situation in South Africa has deteriorated even further after 2000. Fraud, corruption, criminality in general, violence and nepotism are the order of the day. Anomie has also filtered through to the schools in the form of weak discipline, unruliness, violence, bullying, assault and even murder.

4. Four contentions regarding the problem

The current discourse regarding citizenship education has been centring, among others, on the issue of balance between local, national and global citizenship education (GCE). The core argument of this presentation is that although GCE has become important in the 21st century (all people are also world citizens due to modern communication, transport and migratory patterns) countries suffering from similar moral and anomic afflictions as South Africa should persist in looking inward in the citizenship education in their schools. Citizenship education that effectively embraces and includes moral education will arguably help countries suffering from moral degeneration such as South Africa to overcome the problem in the long run. This core argument unfolds into four contentions:

4.1. Contention 1: The moral regeneration movement instituted in 1997 has failed to address the morality problem in South Africa

The origins of the Moral Regeneration Movement in South Africa date back to a meeting in 1997 between President Mandela, leaders of faith-based organisations and the then-Deputy Minister of Education. The Movement was launched in 2002 with the appointment of staff. In 2003, the *Charter for Moral Communities* was launched, and in 2007, the *Charter of Positive Values*. In 2008, this document was formally adopted by the Moral Regeneration Movement under the patronage of the then-Deputy President on behalf of all South Africans (Moral Regeneration Movement, 2018). Although the Moral Regeneration Movement still exists in 2018, the description of its history on its own official web page ends at 2008. This is significant in view of the moral deterioration that South Africa has undergone since 2009. The work of this Movement was initially deemed to be so important that the Deputy President of the country was charged with the leadership of the Movement, but the leadership position has since been downgraded. According to the latest reports, the Movement has all but petered out due to lack of funds and government support. According to Saunderson-Meyer (2016), the Movement has lost all significance since it stands under the patronage of people with "limited ethical profile". It has also failed to criticise prominent South Africans who transgressed the Movement's moral norms, and it has so far both miss- and overspent taxpayer monies without showing any results, apart from declaring July as the annual Moral Regeneration Month (Chairperson of the Public Service Commission, 2016: 2). The Movement furthermore has only six staff members and is "barely operational". The time has therefore come to terminate the Movement, according to Saunderson-Meyer (Ibid).

An analysis of the Movement's *Charter of Positive Values* reveals that if all South Africans adhered to the values outlined in this document, many of the moral problems and obstacles that currently obstruct personal and communal life in South Africa could dissipate. Unfortunately, however, neither the Moral Regeneration Movement nor its *Charter* has had any meaningful effect on life in South Africa. This will remain the prevailing position as long as influential political, business and community leaders persist with their current immoral lifestyles and behaviour. In 2016, Science and Technology Minister

Naledi Pandor remarked that the late Chris Hani would have been appalled "by the low ethics, immoral conduct and corruption of the political movement for which he sacrificed his life," among others self-enrichment, rent-seeking, nepotism, corruption and gravy-train excesses (Saunderson-Meyer, 2016). The "ordinary" citizens on the ground are being led by powerful people in society to believe that immoral behaviour is acceptable, and hence they themselves tend to increasingly indulge in criminal behaviour and general anomie.

4.2. Contention 2: The majority of school children in South Africa are not sufficiently or optimally exposed to moral education in the context of life orientation and life skills as school subjects

Analysis of the Grade 12 examination results at the end of 2017 reveals the extent of the problem. Of the 1 185 198 Grade 1 cohort that entered the school system in 2007 (DoE, 2006: 9), only 1022853 progressed to Grade 2, and only 75% (400863) of those who actually wrote the Grade 12 examinations (534484) passed Grade 12 at the end of the 2017 (Spaull, 2018: 14). This means that around 700000 of the 2007 Grade 1 cohort had fallen by the wayside, having either dropped out of school for various reasons, failed in the lower grades or were being held back at the end of Grades 10 and 11 in order to cosmeticize their schools' performance in the Grade 12 examinations a year or two later. Those who have dropped out (number unknown) have in many cases joined the ranks of the NEETs (not employed or in education and training), thereby reinforcing the numbers of the unemployed, which came in at 27.7% in the third quarter of 2017 (Trading Economics, 2017). In view of Contention 3 below, it could be argued that those learners that remained in the school system (after having failed some of the grades or were being held back for "cosmetic" reasons) might also not receive the necessary moral education in the contexts of Life Skills and Life Orientation due to the absence of pertinent citizenship education and moral education in the curricula of these two subjects. Those who have dropped out of school have of course forfeited any exposure to moral education as component of citizenship education.

4.3. Contention 3: Even those who succeed in staying in the school system for the full 12 years are not sufficiently exposed to moral education

Analysis of key documents such as *Manifesto on Values, Education and Democracy* (2001), the *Policy of Religion Education* (2003) and the *Curriculum and Assessment Policy Statements* (2011) reveals that moral education (which for purposes of this discussion is regarded as a key aspect of citizenship education) does not figure satisfactorily for purposes of combating the violence in schools and in society.

The authors of the *Manifesto on Values, Education and Democracy* (2001) felt a need for the moral regeneration and the re-norming of society (p. 6) in view of the moral degeneration that could be detected in South Africa around 2001 and also because the Constitution of the country and the National Policy Act of 1996 demanded it. According to the latter, education in South Africa "should contribute to the full personal development of each student, and to the moral, social, cultural, political and economic development of the nation at large, including the advancement of democracy, human rights and the peaceful resolution of rights" (p. 9). Elsewhere, the authors of the *Manifesto* refer to citizenship education as such when they state that the exercise of moral judgement means accepting that we educate young people not only for the market but also for good citizenship (p. 11). In order to achieve these citizenship education ideals, young people should be assisted to achieve a sense of values at school that will help them reach higher levels of moral judgement in Kohlbergian terms (p. 3, 10). Among others, they should receive religion instruction offered with special regard to the morality and values that underpin the various religions (p. 5).

An analysis of the South African *Policy of Religion Education* (2003) reveals that its authors were similarly aware of the moral deterioration in the country by 2003 (par. 31), and therefore stated that education in the schools should link up with the ideals of the moral regeneration movement (par. 7), and also that religion education and religious observances in schools should focus on the cultivation of moral values and ethical commitments (par. 14, 19, 22, 26, 31, 52, 65). They regarded the Life Orientation programme in schools (see discussion below) as the most appropriate vehicle for impacting on the ethical and moral dimensions of learner development in the schools (par. 20). They regarded religions as the key sources of morals and ethics and for the building of regard for others; religion education should therefore concentrate on cultivating values of justice, mercy, love and care, commitment, compassion and cooperation among the learners (par. 31). Only in one instance do the authors connect these values with citizenship education as such: according to them, Religious Observances in schools should provide a framework for the development of ethical, moral as well as *civic values* (par. 65).

The *Curriculum and Assessment Policy Statements* (2011) for Life Orientation (FET Grades 10-12) makes ample provision for moral education, but clearly not sufficiently for education in this context to contribute significantly to the eradication of the moral degeneration discussed above. It simply

states that learners should be morally equipped (p. 7), and that they have to study contemporary moral and spiritual values in the context of three or four major religions (pp. 8, 17). Civic duties and responsibilities do not appear in the list of moral issues to be studied, however.

4.4. Contention 4: Moral education as part of citizenship education should be more deliberately and pertinently emphasised in education policy documents

The preparation of children for global citizenship is meaningless if all is not well at home, if citizens do not understand their national duties and responsibilities in relationships with their own compatriots. A brief look at three core policy documents that guide education in South Africa shows that moral education has not been given the necessary gravitas in view of the immorality and anomie currently prevailing in South Africa. Moral education as a key component of South African Citizenship Education is not argued in any depth. It is therefore recommended that all South African education policy documents be revisited with the purpose of infusing them much more strongly and pertinently with the core notions of *moral civic education*, particularly the notion of moral imagination and empathy (the willingness to place oneself in the shoes of another person)(De Cicco, 2016: 3).

It is furthermore suggested, in view of recent publications on GCE, that topics such as the following be pertinently included in education policy documents, not only in South Africa but also in other countries currently afflicted by immorality and anomie (this is in addition to assisting learners to take note of and attempt to appreciate the situations of "others" in society at large, around the globe (Miedema & Bertram-Troost, 2015: 47)). Space does not allow a detailed enumeration of subjects that should be included; the following are only a few examples:

- Instead of concentrating on a kind of "neutral", uncontroversial, uncontested and widely accepted agenda for citizenship education that abounds with platitudes regarding democracy and the promotion of democratic values and norms, social competence and tolerance for diversity (cf. Eidhof, Ten Dam, Dijkstra & Van de Werfhorst, 2016: 115), the policy documents should also include more controversial subjects such as anti-racism, genderism, coping with diversity and conflict resolution in the country as such.
- General platitudes about good citizenship should be replaced with a more contextual approach, in other words, specific problems prevalent in a school's own community should be addressed (cf. Miedema & Bertram-Troost, 2015: 44).
- Citizenship education should not be exclusive and inward looking but should also connect with the global citizenship situation. It can be agreed with Miedema and Bertram-Troost (2015: 49, 50) that "the worldwide nature of problems we have to face does not ask for an exclusive particularistic (local, parochial – author) formulation of the problem (or of the solution – author), not even for an exclusive focus on national identity. (…) For that reason it is necessary that democratic state citizenship and global citizenship (education – author) form a continuum."
- Citizenship education in schools should inspire learners not only to take cognisance of social justice and other problems in their own social spaces but also inspire them to take action derived from an understanding that all people have rights as well as responsibilities towards others. The learners should be guided to develop a natural urgency and moral responsibility to do something about a situation, to act upon an issue or a problem that they have encountered (De Cicco, 2016: 6). Their actions have to be inspired by the main focus of citizenship education: respect and tolerance (Miedema & Ter Avest, 2011: 419).

5. Conclusion

South Africa and other countries similarly currently afflicted by violence, immorality and anomie among their citizens would benefit from more pertinent moral education as key component of Citizenship Education since exposure to this form of education could lead to the formation of an empowered citizenry that will have the confidence and knowledge to hold others, including public and private officials, to account. It will also inspire future leaders of countries to hold themselves to high ethical standards and to act with integrity (Chairperson of the Public Service Commission, 2016: 1). As far as South Africa is concerned, the formation of such a morally empowered citizenry is in line with the Constitutional values outlined in Sections 1, 9, 195 and the Bill of Rights contained in the Constitution (Chapter 2, South Africa Act 84 of 1996). Effective Citizenship Education in all the schools could result in building communities grounded on positive values and a caring society that might lead to lasting peace and prosperity in the countries concerned.

References

Banks, J. (2008). Diversity, group identity, and Citizenship Education in a Global Age. *Educational Researcher*, 37(3), 129-139.

Burton, P. & Leoschut, L. (2013). *School violence in South Africa. Results of the 2012 National School Violence Study*. Cape Town: Centre for Justice and Crime Prevention. Monograph series, no. 12. March.

Chairperson of the Public Service Commission. (2016). *Speech on the occasion of the signing of the Memorandum of Understanding between the PSC and the Moral Regeneration Movement.* 21 July. Johannesburg.

De Cicco, M.C. 2016. Global citizenship education within a context of accountability and 21st century skills. The case of Olympus High School. *Education Policy Analysis Archives*, 24(57), 1-21.

DoE Department of Education (South Africa). (2006). *Educational statistics in South Africa*. Pretoria. January.

Eidhof, B.B.F., Ten Dam, G.T.M., Dijkstra, A.B. & Van de Werfhorst, H.G. (2016). Consensus and contested citizenship education goals in Western Europe. *Education, Citizenship and Social Justice*, 11(2), 114-129.

Miedema, S & Ter Avest, I. (2011). In the flow of maximal interreligious Citizenship Education. *Religious Education*, 106(4), 410-424. July.

Miedema, S/ & Bertam-Troost, G. (2015). The challenges of global citizenship for Worldwide Education: The perspective of social sustainability. *Journal of Teacher Education for Sustainability*, 17(2), 44-52.

My Broadband. (2018). South Africa's real 2017 matric pass rate. https://mybroadband.co.za/news/government/243498-south-africas-real-2017-matric-pass-rate-39-25.html Accessed 17 January 2018

Power, T. (2017). School violence. In: Veriava, F. (Ed.) *Basic Human Rights Handbook – Education Rights in South Africa.* Johannesburg: Centre for Child Law. (p. 300-309).

RSA Department of Basic Education. (2011). *Curriculum and Assessment Policy Statements. Life Orientation (FET, 10-12)*. Pretoria.

RSA Department of Education. (2003). National Policy on Religion and Education. *Government Gazette* 25459. Vol. 459. 12 Sept.

RSA Ministry of Education. (2001). *Manifesto on Values, Education and Democracy*. Pretoria.

Saunderson-Meyer, W (2016). Time to ditch SA's failed Moral Regeneration Movement. *Mail and Guardian* 16 April. Thoughtleader.co.za/williamsaundersonmeyer/2016/04/16time-to-ditch-sas-failed-moral-regeneration-movement/ Accessed on 18 January 2018.

Spaull, N. (2018). The real matric rate and the real site of failure in education. *Sunday Times*. 14 January (p. 14).

Trading Economics. (2018). *South Africa's unemployment rate.* https://tradingeconomics.com>countries>southafrica Accessed 17 January 2018.

PROMOTING MOBILE LEARNING THROUGH THE ESTABLISHMENT OF A MOBILE LEARNING COMMUNITY

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Abstract

With the fast development of mobile technologies, mobile learning has been adopted by more and more students and staff in higher education institutions. This paper reports on a project which aimed to promote mobile learning in higher education. In order to find out students' and teachers' experiences and perceptions about mobile learning in a tertiary institution in Hong Kong, over 100 students and around 50 staff members across different disciplines were surveyed online, and follow-up interviews were carried out with 35 students and 11 staff. The research findings suggest that both students and staff were generally positive towards mobile learning as around 75% of the respondents from both groups thought mobile learning should be encouraged in subject learning and teaching. Most of them agreed that mobile learning could provide an adaptive learning environment as mobile technologies are commonly used in teaching and learning in the 21st century. Moreover, many were actively engaged in creative use of mobile technologies in assisting learning and teaching, believing that the use of mobile technologies to support teaching & learning would become a trend in the coming future. In the survey, the students stated that the lack of training on learning apps was the biggest obstacle to the use of mobile devices in learning. Based on the findings, students and staff were invited to form a mobile learning community and share their mobile learning or mobile-assisted teaching experiences through various activities, such as writing app reviews, compiling mobile learning e-portfolios, participating in sharing sessions and offering seminars about mobile learning. To facilitate sharing among community members, a website titled 'Mobile Learning @ EdUHK' has been created to showcase tertiary students and teachers' good practices in mobile learning and teaching. A variety of resources have been featured on the website, such as video clips of public seminars about mobile learning, mobile learning App reviews, mobile learning e-portfolios, and useful links for mobile learning. The challenges and solutions of creating and maintaining a substantial Mobile Learning Community (MLC) will be discussed. It is hoped that our study will shed some light on how mobile learning can be promoted effectively in higher education institutions.

Keywords: Mobile learning, mobile learning community, higher education, Hong Kong.

1. Introduction

Teaching and learning in the 21st century has experienced the substantial growth of wireless and mobile technologies which has changed "the delivery of knowledge through the digital learning from distance learning (dLearning) to electronic learning (e-Learning) and eventually to the mobile learning (m-Learning) model of today" (Bidin & Ziden, 2013, p. 721). This trend has been made possible with the advanced development in mobile devices (e.g. smartphones, tablets, apps, etc.) which are widely available, more convenient, and less expensive (Wu et al., 2012), and has greatly enriched and assisted students' subject learning in higher education, especially in Hong Kong where there is free wifi service in many public places and people can get relatively cheap data packages for smartphones with Internet access (Wang & Ma, 2017). Through mobile technologies, students in higher education can learn anytime, anywhere (Chan et al., 2006; Wong & Looi, 2011). Students' in-class learning experiences are connected with those out-of-class (Lai & Gu, 2011), which helps to contextualize the learning and facilitate students' academic success (Kukulska et al., 2011). Wu et al. (2012) report that mobile technologies have recently been widely implemented in teaching and learning diverse subjects at different education levels.

As English is the major medium of instruction in Hong Kong tertiary education, our study links mobile technologies with subject learning through English and showcases the vitality and creativity of tertiary students of different levels (undergraduates, masters, doctorates) and from different disciplines (Science, Social Science, Education, Arts and Humanities, etc.) in mobile learning. A broad definition of mobile technologies will be adopted in this study: various mobile devices (ordinary phones without internet access, smartphones with internet access, laptops, Tablet PCs, MP3s/MP4s, and handheld electronic dictionary) connected to a network and equipped with online technologies (Ma, 2016). The participants come from different contexts with different learning intentions, and therefore, they need different things for learning. This ultimately results in creating the mobile learning community, a new form of learning environment, which "leads learners share daily practice to exchange collaborative reflection via mobile networks. Learners who have memberships can improve their levels of reflective practices based on situated learning theory. They develop social product extend beyond individual project" (Lee, 2015, p. 69).

The Department of Computer Science at the University of Illinois developed the Mobile Learning Communities (MLCs) in 2010 to enable students to share trusted educational services with each other via iPods, cell phones, and other handheld mobile devices. Moreover, students are encouraged to develop MLC software applications and to share these applications with other students. It is hoped that students will have a new avenue for collaborating with classmates and making new connections through the Mobile Learning Community (https://cs.illinois.edu/news/illinois-faculty-developing-mobile-learning-community). During the 2013-2014 school year, the Winston-Salem/Forsyth County Schools (WSFCS) in the US introduced the Mobile Learning Communities Program (MLCs): Bring Your Own Device model to achieve the following goals: (1) Enhance student learning by integrating digital resources to create, communicate, and collaborate in 21st century. (2) Help students achieve media literacy mastery and aid in the development of positive online, safety practices, and digital footprints. (3) Leverage the use of all types of digital resources to engage students and extend learning beyond the four walls of the classroom. (4) Provide a digital-rich learning environment for students (Sherrill, 2013). Similarly, one of the objectives of our project is to further develop a mobile learning community among tertiary students and academic teaching staff, motivating them to use mobile technologies in learning and teaching various tertiary level courses. In this case, learners from diverse disciplines contribute, share resources and information and learn together with the help of mobile technologies, which is not only seen as "facilitating members' practices and communication but also playing a central role in advancing their learning" (Wang & Ma, 2017, p. 21). This paper reports on a project which aimed to promote mobile learning in higher education through the Mobile Learning Community (MLC).

2. Students' and teachers' experiences and perceptions of mobile learning

It has become increasingly important to investigate how mobile devices and learning software/apps facilitate teaching and subject learning in tertiary institutions, and how mobile learning can be promoted effectively in higher education. In this study, quantitative and qualitative research methodologies were used to investigate mobile learning and mobile-assisted teaching practices among students and lecturers in the Education University of Hong Kong (EdUHK). For quantitative methodology, both students and lecturers were invited to fill in an online questionnaire survey respectively. We received 49 responses from lecturers of various departments; while 110 students from different disciplines (Science, Social Science, Education, Arts and Humanities, etc.) responded to our survey. The qualitative data was collected through the follow-up individual interviews with both students and lecturers. Each individual interview lasted for about 30 minutes and we interviewed 11 teaching staff (22.4%), and 35 students (31.8%).

The research findings suggest that both students and staff were generally positive towards mobile learning as around 75% of the respondents from both groups thought mobile learning should be encouraged in subject learning and teaching. Teachers (81.6%) agreed because mobile technologies can allow them to engage students in learning in a flexible manner, and encourage this learning to continue outside classroom and mobile devices can increase students' interest and motivation in learning and (71.1%). Meanwhile, students (70%) agreed that mobile learning will be a more flexible method of learning as it can be done anytime, anywhere. Their agreement is also reflected in the follow-up interviews. For examples, S1 said, "In Year 1, a teacher used Edmodo in class, asking us questions and we needed to give responses. I think we were more involved in the learning process." S2 pointed out, "Our peers used 'Kahoot' in their presentation, asking us questions and we were eager to answer them. It was fun and we enjoyed it." T1 stated, "Facebook is a useful learning platform. I tried to establish a group on Facebook to facilitate students' learning."

Apart from agreeing that mobile learning should be encouraged in subject learning and teaching, there were reasons for disagreement as well. The majority of teachers (90.9%) and students (60.7%)

thought usage of wireless handheld devices in classrooms will distract students' attention and traditional face to face teaching is more effective than mobile learning. T2 stated, "I do not allow them to use mobile phones in class as I am afraid they use their phones to communicate with their friends, distracting their learning." T3 said, "About 5 to 7 years ago, it became usual for my students to have mobile phones in school, and university teachers started to have debates with the students whether or not to use the mobile devices in the classroom. The first response is that students would be distracted. I still have colleagues both in Hong Kong and the United States feel that way about mobile devices, so do I." S3 said, "Sometimes the teachers do not allow us to use the mobile devices in class because they do not know what we are doing during the lessons, and maybe because some of us are studying, but some are on WhatsApp or Facebook…" S4 pointed out, "In one of my courses, printing out notes is one of the course requirements by the teacher. Maybe she is afraid we will be distracted by mobile devices." S5 said, "I'd rather print out the notes myself as I like writing on paper while listening to teachers. Also, I do think traditional teaching is better than mobile learning."

Smartphones with internet access and laptop computers were considered the most useful mobile devices for preparing or carrying out subject-related activities by both teachers (70.2%) and students (67.3%). The former mostly used those devices to prepare teaching materials at home and in office (about 60%). However, the majority of students pointed out that most teachers only used desktop computer in classroom teaching, showing the PowerPoint slides or video and only two student interviewees stated that their teachers, apart from using computers, used mobile devices as well. S6 said, "I don't have any teachers who use mobile devices in teaching." S7 expressed, "I have two teachers who use iPad. One is to show us the apps for teaching in an English course. The other one shows us his PPT slides and photos on his iPad via the projector."). Students, in some cases, used more than one mobile device inside and outside the classroom. S8 said, "I usually use smartphone on public transport to read articles and during lessons to look for definitions of some difficult words. Tablet is used in class to look through the PowerPoints and to read eBooks, and I use laptop at home to do assignments and revisions."

Meanwhile students mostly used smartphones with internet access and laptop computer at home/dormitory (81.8%) and during lectures/tutorials (76.4%). In addition, lecture PowerPoint slides (71.8%) and course-related videos (64.5%) were the two teaching materials that students were interested in accessing on a handheld mobile device. Fewer students were interested in accessing interactive educational games (35.5%) and course related online discussion/interaction (40.9%) on a handheld mobile device. The reasons might be the interactive educational games were not attractive to tertiary students and they were not interested in doing online discussions. Most student interviewees pointed out that they did online discussions only because this was one of the course assignments required by teachers on Moodle.

Regarding the biggest obstacles to the use of mobile technologies in teaching and learning, teachers thought they were: 'limited storage' (mean=3.39) and 'size inconvenience' (mean=3.37), while 'lack of training' (mean=3.61) and 'devices too varied' (mean=3.32) were the two biggest obstacles considered by students. It is interesting to find out that three teacher interviewees showed their intention of learning more about apps for teaching through seminars or workshops. However, lack of training was considered the least obstacle by teachers which received the lowest mean score of 2.4, as one of the teacher interviewee (T4) stated, "It is easy to use mobile technologies to assist teaching once you have time to do it, but you need to invest time." Students considered 'lack of training' the biggest obstacle. Some student interviewees indicated that they would usually try out different learning apps by themselves and would delete those they thought were useless while keeping those that were helpful.

In general, teachers are more willing to pay a reasonable price for an app that would facilitate their teaching, while students would rather look for free resources/substitutes unless they are required to buy certain apps/online resources by the teachers/institution. Moreover, both teachers and students share the same view that the use of mobile technologies to support teaching and learning would become popular and even a trend in the coming future. However, it would take more time for teachers to adapt to the use of mobile technologies in teaching as many of them are not familiar with certain apps/software for teaching. According to the teachers, appropriate use of mobile technologies is very important, especially in teaching as the overuse of mobile technologies in teaching would bring negative effects on student learning. In addition, mobile technologies are good tools to engage students in learning if the learning activities are associated with sound learning strategies and pedagogical goals. On the other hand, the ineffectiveness of using mobile technologies in subject teaching and learning is that using mobile technologies in the classroom requires teachers to spend a substantial amount of time planning for the lessons, and training with the hardware before classes begin. Moreover, some technical problems may arise during class, such as network failures and individual students having problems with the hardware, which require the teacher to troubleshoot the issues as well as instructing individual students on how to resolve problems.

3. The Mobile Learning Community (MLC)

Through the research findings, a rich collection of teachers' and students' mobile learning practices was obtained, such as their favourite mobile devices for teaching and learning purposes, frequently accessed online teaching and learning resources, various teaching and learning apps and tools, strategies for self-regulating their mobile learning, and perceived difficulties associated with mobile learning. Based on such rich information, a Mobile Learning Community (MLC) was formed, which is similar to the one established by the Department of Computer Science at the University of Illinois, to encourage the community members to share information and resources of mobile learning with one another. To strengthen the community membership, a website (http://corpus.ied.edu.hk/ml-eduhk/) was launched to accommodate and share diverse mobile learning information and resources contributed directly by students and teachers. This website serves as the main platform to disseminate mobile learning information and allows community members (students and teachers) to share mobile learning resources, to share their valuable insights and to disseminate good practices to other students and teachers who are interested in mobile learning. The current website features the following sections: homepage, sharing sessions, teachers' e-portfolios, students' e-portfolios, app reviews and useful links.

The mobile learning homepage features an introduction that informs the visitors of the different resources available on the site. Visitors can also click on the 'membership' hyperlinks (for students or teachers) to fill in the membership form and become a member of the MLC. Quick Links are provided as well so that members can get access to various sections of the website easily.

A series of knowledge sharing sessions in the form of seminars/workshops on mobile learning given by staff and experts from outside the institution were organized to further disseminate project outputs. As students and staff might not be able to attend these sharing sessions due to time conflicts or other constraints, making video clips available online provides opportunities to all community members to learn and benefit from these valuable sharing sessions. Such meaningful and interactive sharings form the main learning activities for community members.

The "App Reviews" section features 120 language and subject learning app reviews contributed by students of different majors. The apps introduced by students are divided into seven categories: Listening (21), Reading (15), Vocabulary & Grammar (26), Dictionaries (20), Phonetics & Pronunciation (2), Speaking (17), and Others (19). Apart from a basic introduction to the app being presented, a critical review is provided with clear information on both the strengths and weaknesses of the app. Information such as language skills addressed and intended learner levels (beginner, intermediate or advanced) is also included. For downloading purpose, app icon, and the hyperlink to the app can be found in the review.

An e-portfolio is "a digitized collection of artifacts including demonstrations, resources, and accomplishments that represent an individual, group or institution" (Lorenzo & Ittelson, 2005, p.2), which can be used for critical reflection and learning purposes. One of the functions suggested by Lorenzo and Ittelson (2005) is to share teaching philosophies and practices. Therefore, our project aims to collect e-portfolios of rich and diverse evidence of students' and teachers' mobile learning and teaching experiences that facilitate deep, critical self-evaluations of the learning and teaching experiences, which help students and teachers to further strengthen their subject knowledge learning and their course teaching respectively through the use of mobile technologies. A rough template was provided to guide their e-portfolio building (In the template, the following elements are included: Subject area; focus of learning/teaching; Apps used; strategies employed when using the apps to assist learning/teaching; artifacts as evidence (icon of apps, screenshots, audio/video clips about the mobile learning/teaching experience, etc.); and reflection on learning/teaching. The e-portfolios consisted of multimedia resources: text files, audio files, video clips and artifacts (e.g. screen shots or e-notes). Altogether, 17 e-portfolios from students were collected, mainly introducing how they enhanced their English learning with certain learning apps. However, no teachers' e-portfolios have yet been collected. Hall and Hord (2001) consider change in education as a complex process that takes a minimum of three to five years, while large-scale innovations take longer time. In general, teachers seem to be more conservative in adapting to technology. Moreover, they may consider producing e-portfolios time-consuming when they are loaded with numerous work related tasks, and learning how to use technology effectively is challenging and time-consuming as well. Instructors incline to use technology that requires considerably more preparation time, and it is hard to provide instructors and learners access to technologies that are easy to use (Herschbach, 1994). In this case, our project team needs to think of the ways to motivate teachers to produce e-portfolios about mobile assisted teaching, or may even try to boost their acceptance of technology. Lee (2000) states that "The next generation of students will feel a lot more confident with information technology than we do".

As for useful links, we provide the community members with access web links in the following areas: Dictionaries, Listening & Speaking, Reading & Writing, Grammar & Vocabulary, Others, including International e-News Websites and Local e-News Websites. Visitors can access those websites easily by clicking on the links.

4. Conclusion

To build up the MLC is challenging as it targets at recruiting members from various departments (teachers) and disciplines at different levels (students) and there is a gap of acceptance of technology between teachers and students. To establish a successful mobile learning community, a number of key factors need to be considered: we need to recruit proactive community members who are the driving force of the activities organized by the MLC, establish a Mobile Learning Community website as a platform for resource sharing and idea exchange, organize a wide range of student and staff sharing sessions on mobile learning, make a positive impact on students' learning and staff development, and evaluate the effectiveness of the mobile learning community. Only through a concerted effort of members of the whole community can we promote mobile learning effectively.

References

Bidin, S., & Ziden, A. A. (2013). Adoption and application of mobile learning in the education industry. *Procedia-Social and Behavioral Sciences, 90*, 720-729.

Chan, T.-W., Roschelle, J., Hsi, S., Kinshuk, Sharples, M., Brown, T., et al. (2006). One-to-one technology-enhanced learning: An opportunity for global research collaboration. *Research and Practice in Technology-Enhanced Learning 1*(1), 3–29.

Hall, G. E., & Hord, S. M. (2001). *Implementing change: Patterns, principles, and potholes*. Needham Heights, MA: Allyn & Bacon.

Herschbach, D. (1994). Addressing vocational training and retaining through educational technology: Policy alternatives. (Information Series No. 276). Columbus, OH: The National Center for Research in Vocational Education.

Kukulska-Hulme, A., Pettit, J., Bradley, L., Carvalho, A. A., Herrington, A., Kennedy, D. M., & Walker, A. (2011). Mature students using mobile devices in life and learning. *International Journal of Mobile and Blended Learning 3*(1), 18–52.

Lai, C., & Gu, M. (2011). Self-regulated out-of-class language learning with technology. *Computer Assisted Language Learning, 24*(4), 317–335.

Lee, J. E. (2015). A formative intervention on mobile learning community. *Procedia-Social and Behavioral Sciences, 191*, 68-76.

Lee, K. W. (2000). English teachers' barriers to the use of computer-assisted language learning. *The Internet TESL Journal, 6*(12), 1-8.

Lorenzo, G., & Ittelson, J. (2005). An overview of e-portfolios. Educause Learning Initiative, ELI Paper, 1-28.

Ma, Q. (2016). An evidenced-based study of Hong Kong university students' mobile assisted language learning (MALL) experience. In A. Gimeno-Sanz, F. Blin, D. Barr, & M. Levy (Eds.), *Worldcall: Sustainability and mobile-assisted language learning* (pp. 211-226). Bloomsbury Publishing Pic.

Sherrill, K. (2013). *Mobile learning communities and bring your own device*. Retrieved January 18, 2018 from https://www.wsfcs.k12.nc.us/Page/69938

Wang, L. & Ma, Q. (2017). Community of practice: Building a mobile learning community in a higher education institution to promote effective teaching and learning. In S. C. Kong, T. L. Wong, M. Yang, C. F. Chow & K. H. Tse (Eds.), *Emerging practices in scholarship of learning and teaching in a digital era* (pp. 19-38). Springer.

Wong, L.-H., & Looi, C.-K. (2011). What seams do we remove in mobile-assisted seamless learning? A critical review of the literature. *Computers & Education 57*, 2364–2381.

Wu, W. H., Wu, Y. C., Chen, C. Y., Kao, H. Y., Lin, C. H., & Huang, S. H. (2012). Review of trends from mobile learning studies: A meta-analysis. *Computers & Education, 59*(2), 817–827.

CHALLENGES FACED BY FEMALE LEARNERS FOLLOWING AN ENGINEERING CAREER IN SOUTH AFRICA

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Abstract

The objective of this study is to examine the specific problems that arise in a society with patriarchal attitude toward women and their choice of a future career. Within the University of South Africa (UNISA) the College of Science, Engineering and Technology (CSET) started in 2009 a community outreach programme (The GirlPower programme) whereby once or twice a year, female learners from the high schools in the Johannesburg and Pretoria area, are invited to a workshop where the engineering choice of career is discussed. To understand better the hurdles faced by the female learners while choosing an engineering career, the authors carried out a survey among a sample of 74 future female engineering students, GirlPower (2017), currently part of the "GirlPower" group. It emerged that although 99 % of the female learners' enrolled for mathematics and physical science only 32 % intend to continue with engineering studies at tertiary level. The big problem is parental and society attitude toward a female child being "able" to study engineering. In a previous study done in 2010 on a sample of 418 university engineering students, Ionescu (2010), a staggering percentage of 84 % of male engineering students would not send a female child to study engineering, 82 % of schools did not offer any other engineering orientated subjects leading to 64 % of the students having difficulties understanding engineering modules at university level, and most worryingly 42 % of the engineering students did not have access to a computer in high school. Seven years down the line the situation worsened with 46 % of learners being computer illiterate after high school. Based on a survey conducted among engineering companies, Ionescu (2011), an inexplicable picture emerges. Looks like our female engineers just "disappear". Although the engineering female graduates represent about 21,5 % of the total engineering graduates, in a large company with about 20 000 employees only 3480 are female and not one single female engineer. The current survey, GirlPower (2017), shows a relatively black picture of the future of female engineers even if the schools in Johannesburg and Pretoria area are considered to be among the best in the country. 58% of learners did not get a science kit in high school, in 64 % of the cases only the teacher is allowed to perform science laboratory experiments and 77 % never heard of virtual laboratory experiments. Based on the present survey the authors will attempt to suggest some solutions to the problems faced by female learners.

Keywords: Female learners, engineering career.

1. Introduction

The challenges to ensure fair access across the whole spectrum of the society to engineering education are multi-faced, and not unique to South Africa. The student's rate of success in tertiary education is directly linked to the quality of high school education and the parental / community attitude toward tertiary education. Through a study done by Ionescu (2013) over a large sample of engineering students, it was find that in South Africa the parental attitude toward tertiary education is very positive but the ability of a child to enroll for tertiary education is restricted by poverty and sometime lack of career guidance at high school level. The study carried out by the authors, reflects some of the daunting realities that young women are facing if they want to pursue an engineering career. The South African society although still very divided along economical and racial lines, agrees over the fact that engineering is not exactly a "right" career path for a woman.

Today all career opportunities in engineering are opened to women, which make sense as 52 % of South African population is female. For the industry to ignore over 50 % of the available human resources would be suicidal in the global competitive environment. To the credit of the majority of

companies, the bursaries for engineering education are deliberately targeting women belonging to the previously disadvantaged communities. Women protection and promotion policies are fundamental toward attaining real freedom and empowerment. In spite of the Constitutional protection that the women enjoy, our extremely patriarchal society has a problem tolerating women in the engineering field. To date the average proportion of female students in the engineering field are only about 20 – 25 %.

2. High school challenges

2.1. What to study?
In the present survey several questions were asked relating to career choice as shown in table 1.

Table 1. Why follow an engineering career?

What is your reason to follow an engineering / science career?											
Roll model in the family (a family member is an engineer / scientist and you would like to follow in his/her steps)			From your childhood you dreamed to become an engineer/scientist			Did you ever receive any advice regarding your career choice while in the high school?			You were offered a bursary with the condition to study engineering/science		
yes	no	N.A	yes	no	N.A	yes	no	N.A	yes	no	N.A
12%	83%	5%	7%	56%	37%	65%	26%	9%	8%	90%	2%

Considering the data in table 1 there is no really clear reason emerging for choosing the engineer career. Looks like the career choice advice received in high school by 65 % of the students may have played a role but then 90 % of the students were not offered any incentives by means of a bursary to follow the engineering path. The present survey had only female students, members of the "GirlPower" group, and relates to a survey conducted among male students [5] at the University of Johannesburg shown in tables 2 and 3, Andrew and Ionescu (2005).

Table 2. Gender discrimination issues.

Discrimination and gender relation, male students only (128)								
Is the engineering profession not suitable for women because:			See female engineers as a treat to male job security			The women should stay at home and perform traditional family care duties		
Is dangerous	Too physically demanding	na (no answer)	yes	no	na	yes	no	na
14	16	98	18	107	3	12	112	4
11%	12,5%	76,5%	14%	84%	2%	9%	88%	3%
Government women promotion policies discriminate against male engineers			Objection against engineering career for a close family member					
yes	no	na	yes		no		na	
51	71	6	23		100		5	
40%	55%	5%	18%		78%		4%	

Table 3. Education choices.

As the head of household with scarce resources, whom will you choose to educate?				
	A male child	A female child	both	No answer
Female students (32 students)	2	26	0	4
	6%	81%	0%	13%
Male students (128 students)	108	2	2	16
	84%	1,5%	1,5%	13%

The potential female engineering student is handicapped from start due to the patriarchal society in which they live. A male household head will send to study engineering 84 % of male children and only 1.5 % of female children. Although the answers listed in tables 2 and 3 tend to be "politically correct", the underlying trend is that the male engineers are weary to say at least, by female competition for engineering jobs. In a survey carried out by the authors among industry people in senior management position, remarkably the middle aged males were 100 % against the engineering profession for a female close relative. The reason for this opinion was mainly that the working environment is not suitable for women, too rough, dangerous, too physically demanding etc. The real reason is that in a patriarchal society like ours, a wife or daughter "belongs" to the family head who decides what is best for her.

2.2. What the school can offer?

Table 4. High school challenges.

At your high school did you study:											
Mathematics and Physical Science?			Mathematics literacy?			Were there offered in your school any engineering subjects such as technical drawing, mechanics, etc.			Did you have access to a computer and learned computer skills during high school?		
yes	no	N.A	yes	no	N.A	yes	no	N.A	yes	no	N.A
82%	8%	10%	14%	54%	32%	29%	19%	52%	52%	46%	2%
How do you feel about the teaching at your high school?											
Do you have the feeling that you are unable to keep up the pace and you feel left behind?			Do you study every day?			Do you study only before tests and exams?			Do you have subjects that you just do not understand?		
yes	no	N.A	yes	no	N.A	yes	no	N.A	yes	no	N.A
82%	8%	10%	14%	54%	32%	29%	19%	52%	47%	51%	2%
Do you have a library at your high school?											
Do you know how to use the library facilities (to look for a book using the computer in the library)?			How many times per week you go to study in the library?			Is the library staff helpful and polite toward you?			Are you also using the community library?		
yes	no	N.A	2-3	1	0	yes	no	N.A	yes	no	N.A
12%	78%	10%	1%	50%	49%	44%	7%	49%	7%	71%	22%

In the modern age that we are living in, the most worrying problem is the lack of electronic equipment and internet access in the high schools. Considering that, the GirlPower students are from schools in Johannesburg and Pretoria in the rural area the problem is amplified many folds. Also, the self-study skills that a learner should acquire in high school is not happening with only 12 % of students using the library facilities and 49 % never going to the library. Unfortunately, the situation did not improve significantly over the years. In a survey done in 2014 among University of Johannesburg students, Ionescu (2014), only 41 % had access to a computer in High School.

2.3. The integration of practical engineering / science experiments in the high school curriculum

Proving theoretical concepts through laboratory experiments is extremely important for the future engineer. The science notions become less abstract and helps understand them better. Unfortunately, the "Virtual laboratory experiments" are not an option as only 52 % of the students have access to a computer. Table 5 shows the results of the current survey.

Table 5. Science laboratories in high schools.

Do you have a science laboratory at your high school?											
Do you know how to use the laboratory equipment?			Is only the teacher demonstrating the laboratory experiments?			Are the learners allowed to perform the laboratory experiments?			Were you provided with a science kit at the beginning of the term?		
yes	no	N.A	yes	no	N.A	yes	no	N.A	yes	no	N.A
65%	30%	5%	64%	32%	4%	32%	64%	4%	40%	58%	2%

Because in 64 % of the cases only the teacher is allowed to perform the science experiments, the laboratory role is diluted. Becomes something unattainable with students losing interest and not paying attention. The Engineering Council of South Africa (ECSA) as a regulatory body of engineering teaching, requires as compulsory a minimum of three relevant laboratory experiments to be performed by each student. A study carried out by the author, Ionescu (2014), showed that the integration of the laboratory experiments into modules showed that the understanding of engineering principles and academic performance was enhanced for over 79 % of the students. In South Africa, the Engineering National

Diploma programs have the work integrated learning (WIL) module as part of the qualification, whereby a whole year is spent in industry. Due to a total lack of basic engineering skills of the majority of our future engineering students, the industry placement is very difficult as the industry tend to see them as a liability. However, all efforts must be done in this regard as the WIL in tertiary education and laboratory experiments in high schools helps with understanding of difficult modules, see Table 6 Ionescu (2014):

Table 6. Engineering modules understanding enhancement, after work integrated learning.

After work integrated learning, the general understanding of engineering profession was enhanced.			After work integrated learning, the students' academic performance was enhanced?		
yes	no	na	yes	no	16%
67%	12%	21%	54%	21%	25%

3. Senior Certificate graduates in South Africa

The high school graduates are facing many challenges and unfortunately political interference. According to official statistics South Africa's matric pass rate between 2007 up to 2017 fluctuated around 70 %. The matric pass rate has shown major improvement sanctioned by the ruling party but sent alarm bells ringing among academics, who claim to have not seen any real improvement in the quality of South African education over time. The Department of Education of South Africa compiled matric pass rate statistics over the last 10 years from 2007 until 2017, Statistics South Africa (2017).

This official statistic is refuted by the opposition party because the official pass rate does not tell the full story – ignoring the large percentage of students who drop out before they write the matric exams. Equal Education (a non-profit organization) said "The pass rate reflects only the performance of those learners who managed to stay in school for 12 years. For a broader perspective, a cohort matric pass rate should be used. In 2017 out of cohort enrolments in grade two of 1,022,853 students, 629,155 registered for matric but actually only 534,484 wrote the exam. Consequently, the dropout rate is 47.75 % and the real pass rate is only 40, 86 %, and this is cause for serious concern.

3.1. Female matric / engineering graduates in South Africa

Among all this political turmoil interfering with basic education the most vulnerable are the female students. If a female student is failing high school the family most likely will stop sending the female child to school. Fortunately based on different statistics the female learners are performing better than the male learners although they have less support from family and society. Once the female child graduate from high school, enter a tertiary engineering and graduate, her problems do not stop. After graduation the young engineers do not struggle to find employment as there is a shortage of engineers worldwide and especially in South Africa. However, based a survey conducted among engineering companies, Ionescu (2011), an inexplicable picture emerges. Looks like our female engineers just "disappear". In an engineering company with 420 employees there is not one single female engineer employed, and this is common occurrence. One of the major engineering businesses surveyed, employs 46 women, amounting to about 30 % of the total staff complement. This percentage promotes a skewed view of female employment rates, as in reality there are no female engineers and only 5 female machine operators. The other 41 female staff members are cleaners, kitchen helpers, etc. The reality confirms that implementing women friendly legislation is not enough and more radical measures are called for. The current legislation requires businesses to report on the number of women employed but does not require them to specify the job descriptions of these women. As a result, the businesses meet some government targets without actually contributing toward women empowerment. The majority of small and medium sized companies do not have any female engineers in their staff complement. A company whose main business is civil engineering and plant commissioning, agrees that the industry is tough. The company's work is contractor work therefore the engineers has to go where the work is. This is difficult for working mums as they need to move and travel. Many of the male engineers do not move their families but go home in weekends.

4. Measures to be taken to correct the problem

- Increase in number of bursaries offered to female students.
- Introduction of engineering subjects such as technical drawing, mechanics, etc. in high schools.
- Computer literacy must be a compulsory subject in high school, obviously backed by computer hardware availability in all schools. The urban schools generally are well equipped while the majority of

rural schools are totally deprived. A staggering 46 % of students (table 4) enrol for engineering studies without ever touching a computer before.

- The number of women employed should be reported together with their qualification and the job they perform to avoid skewed statistics.

5. Conclusions

Generally, the schooling of female children in South Africa is difficult. The main problem is the patriarchal society in which the female children exist. It is current occurrence to send a female child to study professions perceived as suitable for women such as nursing, social work and school teaching. There is a need for a radical change in attitude toward the professional freedom of the female students in family and society. The mining industry is a major employer in South Africa but before the Mines Health and Safety act of 1996 women were allowed underground only as members of service delivery teams, Ionescu and Buisson-Street (2008). The harsh physical work environment (+ 3km underground) was considered unsuitable for women and throughout Africa there is a belief that if a female goes underground, the stones (minerals) will disappear. Hoever in spite of everything the first woman was awarded a Blasting certificate in 1999. Currently there are many female miners and mining engineers. On a lighter note in our survey the GirlPower students were asked if they consider South Africa as a first world country when it comes to shoping and the overhelming answer was yes (92 %).

References

Andrew, T. and Ionescu D. (2005). The impact of democratic transition on women in engineering. The 13th International Conference of Women Engineers and Scientists, *August 26-29, 2005 Seoul Korea.*

GirlPower, (2017). Survey carried out at the University of South Africa on a sample of 74 female high school students.

Ionescu, D. (2010). Strategy for engineering education of women in South African under-privileged communities, paper presented at the International Technology, Education and Development Conference INTED2010 Valencia Spain, 8 – 10 March 2010. *The paper presented is published in the Proceedings of the conference ISBN978-84-613-5538-9*; pages 002669 – 002678

Ionescu, D. (2011). The promotion and retention of women engineers in top management positions problems and solutions, paper to be presented at the International Conference for Women Engineers and Scientists (ICWES15), Adelaide; Australia 19-22 July 2011. *Paper published in the proceedings of the congress; ISBN 978-0-85825-997-3*

Ionescu, D. (2013). Improving the Modules Through-Put in Engineering Distance Education by Providing the Students with Adequate Study Material, Paper presented at The International Distance Education Conference IDEC – 2013, Rome / Italy 25th -27th June 2013, *Paper published in the Journal of New Horizons in Education ISSN 2146 – 7382*

Ionescu, D. (2014). The Importance of Working Integrated learning and Relevant Laboratory Experiments in Engineering Teaching, paper presented at the 5th International Conference on New Horizons in Education INTE 2014, Paris 25th – 28th of June 2014. *Paper published in the Journal of New Horizons in Education ISSN 2146-7358*

Ionescu, D and Buisson-Street J. (2008). Women engineers in South African mining industry ICWES 14 – The international Conference of Women Engineers and Scientists, 15 – 18 July 2008, Polytech' Lille – France. *The presentation received the "Best Poster Award Certificate*

Statistics South Africa (published in 2017), retrieved on 07 of March, 2018, NSC STATISTICS SOUTH AFRICA

SCIENCE TEACHER DEVELOPMENT IN A GLOBAL WORLD: A STUDY CENTRED IN MASTER DISSERTATIONS IN ANGOLA

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Abstract

This study is based on the assumption that to teach science nowadays implies to contribute to pupils/students' behavioral changes for promoting a better world in the perspective of a sustainable development (at the environment, social and economic domain). This implies to take into considerations in teachers practices educational international agendas, such as the Millennium Development Goals (2000-2015) and/or the Sustainable Development (SD) Agenda 2015-2030 of the United Nations, and local ones (e.g. MEA, 2008, 2014). One condition for *glocalization* through education to occur is to have high qualified science teachers, in particular those who continue their initial training, for example by doing master degrees. However, this post-graduation formation needs to incorporate the challenges which arise from those political and institutional agendas.

The general aim of this study is to investigate how the Master Course in Science Education (2nd edition), developed in one public Institution of Teacher Education in Angola between 2011-2016, contributed towards teachers' empowerment to integrate in their teaching practices knowledge, strategies and resources associated to the international and national political educational agendas referred to above. The association of these agendas (international and national) should be seen in alignment with a *glocalization* strategy to be incorporated in science teaching.

The empirical study reported here consists in the documental analysis of 27 master dissertations, approved between 2014 and 2016 in the scope of the Master Course mentioned. This analysis has been supported by a framework, build by the authors in which the following documents have been taken on board: (i) the Millennium Development Goals (2000-2015) & the *United Nations Sustainable Development Agenda 2030* (with its 17 SD Goals), (ii) the *Continental education strategy for Africa 2016 – 2025*,(iii) the national educational agendas (MEA, 2008, 2014) and vi) the research agenda of the Institution responsible for the ministration of the academic teacher development program under research. Broadly speaking the results show a need to re-orientate the topics under investigation, as well as the contributions given, in order to better integrate the agendas referred above, and therefore to promote an education for sustainability in its diverse dimensions.

Keywords: Science education, teachers development programs, sustainable development agenda 2030, masters courses in angola, documental analysis.

1. Introduction: science teacher education towards sustainable development

Education is a fundamental tool towards sustainable development (SD). The recognition of this is corroborated by the definition of the 4th SD Goal "Quality Education" (UNESCO, 2016). To achieve 'quality education' for all implies to increase the number of qualified teachers around the world. Therefore it is fundamental to "Review, analyze and improve the quality of teacher training (pre-service and in-service) and provide all teachers with quality pre-service education and continuous professional development (UNESCO, 2016, p. 24).

Science education, in particular, plays a decisive role in shaping critical citizens who are able to understand environmental, economic and societal challenges (Hodson, 2003), both at global and local level (glocally), and also citizens who are willing to actively minimize those problems individually and/or collectively.

The definition of glocal in the educational domain is assumed here with the words of John, Caniglia, Bellina, Lang, & Laubichler (2017), that is what " (…) captures the importance of integrating both local and global considerations when addressing the pressing real-world sustainability problems of our time." (p.31). Lindroos & Loukola, in 2006, already referred to the importance " (…) to see the local activity in a global framework (…)" (p.66) and the necessity to do so from a young age. The idea expressed by the "slogan" "think global and act local" is widespread not only in academic literature but also in education mass media news (see for example, the telegraph English newspaper on 14th February 2018; http://www.telegraph.co.uk/sponsored/education/festival-of-the-imagination/11844122/think-global.html). Let us give an example to illustrate this idea in the scope of science education. For example, in Europe, 6 tonnes from the 16 used of material per person per year, become waste and only a limited share (36%) is recycled (http://ec.europa.eu/environment/waste/), which constitute a damage to the continent environment (global thinking). In this context it becomes important that each European citizen acts in a responsible way towards this problem, in h/she surroundings (act locally). Angola also faces environmental problems related to waste. Therefore, schools, and science teachers in particular when approaching the pollution issue, common to science curriculums in Europe, should not only explain the phenomena concept, but frame it as a global environment problem, and certainly should contribute to their pupils attitudes in management in a sustainable their local waste. But in order to teach in this way, science teachers should have competences to do so. The development of teacher competences, and apart what initial teacher education can do, should continue along their careers, in particular through the attendance of master courses. According to education todays' challenges, it is urgent that science education, and professional development of science teachers empowering them to educate towards sustainable development as it constitutes a public good and a political issue (Martins & Mendes, 2017).

2. Research context: sustainable development and science teacher education in Angola

Angola went through a war of almost 27 years, with three major stages of armed conflict interrupted by fragile periods of peace (Bourguignon, 2013). Since the instauration of peace in 2002 important progress has been made. Between 2000 and 2015 the human development index increased 36.4% (UNDP, 2016). However Angola has still a long way to go. According to the latest Human Development Report (United Nations Development Program - UNDP, 2016), Angola integrates the 'low human development' category. In 2015 its Human Development Index was 0.5333, occupying position 150 out of 188 countries (UNDP, 2016).

According to the sustainable development dashboard, integrating 14 key-indicators of environmental, economic and social realms, Angola's performance is particularly weak considering Environmental and Economic sustainability. In five key indicators of these two domains Angola's performance, is worse than 2/3 of the 188 countries (Table 1). For instance, less than 12% of the final energy consumptions are from renewable resources and carbon dioxide emissions per capita is over 5.0 tonnes.

Table 1. Summary of Angola's performance in the Sustainable Development Dashboard (based on information retrieved from UNDP, 2016, 7)[1].

Tercil Country according to performance	Environmental sustainability key indicators	Economic sustainability key indicators	Social sustainability Key indicators
Top third	2	1	2
Middle Third	1	0	0
Buttom third	2	3	0

Considering the above it is of crucial importance to empower Angola's science teachers in educating their pupils/students' as active citizens, and potentially future policy makers, able of understanding and fighting against problems and challenges that compromise sustainable development, globally and locally.

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[1] 3 Indicators are missing (1 for economic sustainability and 2 for social sustainability). For more information, please consult "Technical Notes" of calculating the Human Development Index. Technical Note 7 – Sustainable

3. Global research goal and design

The present study is integrated in a broader research aiming to:

(i)   investigate the impact of the 2nd edition from a master course in Science Teaching (Biology, Physics, Mathematics and Chemistry) ministered by one public higher education institution in Angola, from 2011-2016 and;

(ii)   delineate recommendations to be considered in the 3rd edition of the course which is currently under preparation, in particular specific guidelines to support science teacher's development, in accordance with a *glocalization* strategy.

This particular study aims to investigate how that course contributed towards teachers' empowerment to integrate in their teaching practices knowledge, strategies and resources associated to the Millenium Development Goals (2000-2015) and/or the Sustainable Development (SD) Agenda 2015-2030 of the United Nations, as well as to articulate those international/world wild agendas with local agendas, problems and resources, in alignment with a *glocalization* strategy. The authors of this paper assume that *glocalization* through education constitutes a fundamental strategy towards teachers and/or pupils/students' behavioral changes for promoting a better world in the perspective of a sustainable development (at the environment, social and economic domain). In addition the alignment referred, it is expected that the course, as well as the research projects to be develop by the master students will be in accordance with the Institutional research agenda..

The research empirical approach consisted in pursuing a qualitative documental analysis (Gray, 2014) of the recent master graduates dissertations approved, for the students who were already teaching science in schools. This analysis was guided by 2 global research questions, each one with subquestions. The first concerns the articulation between the research undertaken with the institutional, international and continental/national agendas. Research question 2 is focused on more specific dimensions in order to deepen the type of research done within the *global* strategy:

RQ1: Are the science teachers' dissertations, aligned with and/or informed by agendas:

- the institutional research agenda, and if yes, how?
- the international development agendas, namely the Millennium Development Goals (200-2015) and/or the Sustainable Development Goals (20015-2013), and if yes how?
- the continental, national and/or local agendas considering teacher education (e.g. MEA, 2008) and environmental, economic and social challenges? And if yes how?

    - Are the international, national and institutional agendas articulated in the science teachers' dissertations? And if yes, how?

RQ2: Do the science teachers' dissertations undertaken include conceptions' identification and/proposal for good practices of *glocalization*? And if yes:

- who were the major stakeholders of the research? (teachers, students, parents, policy-makers, others)?
- which were the major scope of the corresponding research outputs, namely recommendations (classroom, school community, local community, research community, policy-makers, others)?
- do they propose dissemination of the results archived? If so to which targets (academics, professional communities like schools, teachers, others)?

4. Description of the *corpus and preliminary results*

The 2nd edition of the course was attended by 210 graduates. A total of 16 Higher Education Institution from Angola and Portugal were involved in the supervision process. 107 teachers concluded successfully the course by defending their master dissertation. The corpus of the present research is constituted by 27 dissertation involving supervisors of one of the 16 HEI, namely the institution with the highest number of supervised dissertations. Table 2 presents a global characterization of the corpus, considering: scientific domain, teaching level, teaching subsystem and province where analyzed data were gathered.

Table 2. Global characterization of the research corpus (27 dissertations).

Scientific Domain	Teaching Level	Teaching Subsystem[2]	Province
Physic - 7 Chemistry - 5 Biology - 8 Mathematic - 7	Elementary - 1 Secondary - 19 Higher - 7	"General" - 13 "Teacher Education" - 8 "Professional/Technical Education" – 4 Not identifies/not applicable- 3	Benguela - 1 Cuanza Norte - 2 Cuanza Sul - 1 Huíla - 13 Lunda Norte - 2 Namibe - 5 Not identified - 3

Content analysis of the corpus is still in progress. However the preliminary results achieved show, in general:(i) a non-alignment of the Institutional research agenda (IRA) with the international and national ones considered in this study. The areas, aims and examples of projects to be developed are described in a quite traditional way and not framed in the international and national (e.g.. Curricular Design, General Didactics). The IRA has been recently renewed but only one area, out of the 15 proposed, is designated by "Environment Education and Sustainable Development. However, still no references are included concerning the international agendas focused in our study, as well as to an educational global perspective. However, in this recent IRA one can see a notable concern with national educational policies and to the national material an immaterial heritage; (ii) a lack of masters dissertations focused on *glocalization* conceptions and strategies, and only a few, mainly concerning environmental issues, are focused on national problems and on ways to approach them.

Despite the need to continue with the content analysis of our corpus, the preliminary results show a need to continue to re-orientate the IRA, the topics under investigation, as well as the contributions given, in order to better frame the international agendas, and therefore to enhance science teachers' competences in approaching their thinking and practice in a *glocalization* perspective.

5. Final Remark

Several impact evaluation studies of postgraduate education and courses have shown the added value brought by them towards the improvement of the evaluated educational processes and programs. Some of these studies have already begun in the 1980s and 1990s, such as the Bourke and Holbrook study (2002) in Australia and the study by Thornhill (1985) in England. Others are more recent, such as the study by Cruz, Pombo and Costa (2008), carried out in Portugal, and Richetti's study (2014) concerning Brazil. However, no studies of this nature were found for the Angolan context, which may be associated to the still recent expansion of teachers post-graduation courses in this country. In fact, and despite the efforts in development in Angola (e.g. MEA, 2008, MEA, 2014), there is still recognized that qualified teachers continue to be uncovered (MEA, 2014; African Union Commission – AUC, 2016) including in Science Education (Lopes, Costa & Matias, 2016).

Finally, one considers that although the study reported here has been developed in a particular context the authors believe that it may contribute for those who conceive and develop Teachers Education programs around the world.

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[2] According to Law 13/01"Basic Law of the educational System in Angola".

References

African Union Comission (2016). *Continental Education Strategy for Africa 2016 – 2025*. Edis Ababa: AUC. Retrieved 12/16 from http//agenda2063.au.int/en/contact.

Bourguignon, R.M. C.S. (2013). *A importância da Educação na manutenção da paz e reconstrução de Angola/The importance of Education for the maintenance of peace in Angola*, Lisbon: Universidade Autónoma de Lisboa – unpublished master dissertation.

Bourke, S. & Holbrook, A. (2002). Links between Research and Schools: the Role of Postgraduate Students. *The Australian Educational Researcher*, 29,(2), 5-32.

Cruz, E., Pombo, L. & Costa, N. (2008). Dez anos de estudos (1997-2007) sobre o impacto de cursos de mestrados nas práticas de professores de Ciências em Portugal/Ten years of impact evaualtion studies considering master degress in science teachers' practices in Portugal. *Revista Brasileira da Pesquisa de Educação em Ciências,* 8(1), 1-22.

Gray, D.E. (2014). *Doing Research in the real world*. Greenwhich: SAGE.

Hodson, D. (2003). Time for action: Science Education for an alternative future. *International Journal of* Science Education, 36, 645-670.

John, B., Caniglia, G., Bellina, L., Lang, D. & Laubichler, M. (2017). The Glocal Curriculum- a practical guide to teaching and learning in an interconnected world. Alemanha (Luneburg)): Leuphana University Lüneburg, Institute for Ethics and Transdisciplinary Sustainability Research. Lindroos,

K. & Loukola, M. L. (2006). Education for sustainable development towards responsible global citizenship. Policy & Practice: A Development Education Review, 6, 64-75.

Lopes, B., Costa, N. & Matias, F. (2016). Impact evaluation of two master courses attended by teachers: an exploratory research in Angola. Problems of Education in the 21st century, 74, 49-60.

Martins, I. & Mendes, A. (2017). In L. Leite, L. Dourado, A.S. Afonso (Eds.) Contextualizing to improve learning. New York: Nova Science Publishers. Contextualized Science Teaching and the Science-Technology-Society Approach.

Ministry of Education of Angola – MEA (2008). P*lano mestre de formação de professores em Angola: encargos financeiros (2008-2015)/Master Plano of teacher education in Angola: financial charges (2008-2015).* Luanda: Government of Angola.

Ministry of Education of Angola – MEA (2014). *Exame Nacional de Educação para todos: relatório de monitorização sobre Educação para todos.* Luanda: Government of Angola

Richetti, G.P. (2014). *Um instrumento para avaliar a formação de egressos da pós-graduação: o Programa de Pós-Graduação em Educação Científica e Tecnológica da Universidade Federal de Santa Catarina como estudo de caso/ An instrument to evaluate graduate training: the Post-Graduate Program in Scientific and Technological Education of the Federal University of Santa Catarina as a case study*. Florianópolis: Universidade Federal de Santa Catarina, Unpublished PhD thesis.

Thornhill, W. (1985). **A** *study of the impact of masters' courses on teachers professional practices and careers.* Keele: University of Keele, Unpublished master dissertation.

United Nations Development Program – UNDP (2016). *Human Development for everyone. Briefing note* for countries on the b2016 HDR – Angola. New York: United Nations. Retrieved 12/16 from http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf

UNESCO (2016) Education 2030: Inchneon Declaration and Framework for action towards inclusive and equitable quality education and lifelong learning for all. Paris: UNESCO.

CITIZEN SCIENCE: TAKING OFF, TAKING ON, TAKING OVER

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Abstract

Citizen science has been variably described within the literature ranging from 'enlisting the public' to 'non-professional scientific engagement' in research projects such as animal sitings, crop condition reporting, and illness incidence. Regardless of the description, the use of citizen volunteers in a range of research activities (collection, data processing, analysis) has been widely described and debated. In this presentation we highlight the potentials for citizen science to be an educational intervention which not only enhances individuals understanding of their context, but engages them in global issues such as climate change, food security, and health literacy. A number of exemplars and models for citizen science education and development will be address, with consideration of needs of both the citizen and the scientist. Initially, we launch the discussion (take off) by providing a brief history of the citizen science movement reflecting on how past experiences have yield demonstrable positive impacts and generated educational, attitudinal, and behavioural change in those involved. Secondly, we will challenge (take on) the citizen science models, which have tended to limit the involvements to minor roles; hence yielding missed opportunities to fully enjoy the educational benefit of the citizens and the project. Finally we will explore an application (take over) of citizen science featuring a participative framework which describes a project with a pastoralist community in Tanzania using this approach to build skills, share knowledges, and ultimately lead the scientific process to answer necessary and pressing needs within their context.

Keywords: Citizen science, pastoralists, rural education, educational inclusiveness.

1. Introduction

Citizen Science is essentially any effort to invite and embrace public participation in scientific research and knowledge creation. The conceptualization and implementation of citizen science is a longstanding and evolving approach to involving the citizenry in research as well as knowledge building and sharing. For some, citizen science fits neatly under the efforts towards increasing public participation in scientific research (Cohn, 2008). The story of Citizen Science has been replete with controversy and challenges. It has experienced significant variability in the envisioned and/or operationalized levels of research involvement from 'select' (often data collection) to 'holistic' (across all research phases) (Bhattacharjee, 2005; Bonney, Cooper, Dickinson, Kelling, Phillips, Rosenberg, & Shirk, 2009; Cohn, 2013; Haklay, 2008; Silvertown, 2009; Stevens, Vitos, Altenbuchner, Conquest, Lewis, & Haklay, 2014). Some of the classic examples, since the 1800s, have included bird-sightings and migration tracking with more recent efforts ranging from geo-location efforts to climate change to galaxy gazing. Citizen Science potentially allows citizen to bring forward topics, approaches, and 'audiences' maximizing on the different knowledges of citizens and scientists while ensuring a science for all philosophy (Garbarino & Maons, 2016; Lidskog, 2008) emphasized that. In our discussion three key phases are addressed 'taking off', 'taking on', and 'taking over' are addressed in the citizen science evolution.

2. Taking off

Initially, we launch the discussion (take off) by providing a brief history of the citizen science movement reflecting on how past experiences have yield demonstrable positive impacts and generated educational, attitudinal, and behavioural change in those involved.

The popularity of Citizen Science has been rooted in the embedding of research and science in everyday life and activities, in order to achieve broader societal and political goals (Jordan, Gray, Howe, Brooks, & Ehrenfeld, 2011; Freitag & Pfeffer, 2008).

The researchers are able gain access to assemble a research team with limited resources being required, but who have seemingly ubiquitous reach and capacities (Crain, Cooper, & Dickinson, 2014). Hence these types of initiatives are made possible and sustainable due to the presence (Devictor, Whittaker & Beltrame, 2014), responsiveness (Devictor et al., 2014), and social commitment (Hecht & Cooper, 2014) of this unique cadre of citizen scientists. One need only look at the Audobon Society, which nears 120 years of their infamous Christmas Bird Count, to see the significant contributions of citizen scientists in such meaningful, large scale activities (History of the Bird Count, 2004; Niven Niven, Sauer, Butcher, & Link, 2004) often in areas of environment, climate, astronomy, and historical artifacts/archeological efforts. These types of citizen science efforts are now growing with the advent and affordability of personal smartphones, global positioning devices, and digital cameras, which has interconnected this cadre. Through these mechanisms/tools, disciplines such as genetics, informatics, microbiology, and hydrology, have entered the shared domain (Garbarino & Maons, 2016).

Often emphasis lies in citizen science's ability to enable data collection from the local through global levels [Devictor et al., 2014; Bonney, Miller-Rushing, & Parrish, 2014], flexibility and responsiveness during times of change and challenge [Devictor et al., 2014], and rooting in community concerns [Hecht & Cooper, 2014]. These attributes contribute to citizen science influencing research agendas, process, scale, and the inter-dependencies of researchers, academics, and the public [Dickinson, Zuckerburg & Bonter, 2012]. Perhaps, more importantly, the increase in science literacy across all social levels is apparent through increased involvement, empowerment, advocacy, and 'agenda-raising' by citizens [Stevens, et al., 2014; Cooper, Dickson, Phillips, & Bonney, 2007; Lidsog, 2008; Conrad & Hilchey, 2011]. It is apparent that motivated citizen scientists who actively participate can generate scientific, educational, attitudinal, and behavioural outcomes [Cooper, et al., 2007].

3. Taking on

At this point, it is important to challenge (take on) the citizen science models, which have tended to limit the citizen involvements to minor roles; hence yielding missed opportunities to fully enjoy the educational benefit of the citizens and the project. We recognize that there is diversity in the knowledge, skills, and attitudes of citizen scientists which may have significant impacts on the quality and consistency of contributions. However, the researchers have a significant role in leading, coaching, and troubleshooting. As a result there is a trend to have well articulated project descriptions, protocols, participation requisities, and data collection methods accessible and monitored in large scale citizen science efforts (Silverton, 2009).

The challenges are primarily in logistical, philosophical, and methodological elements [Conrad & Hilchey, 2011]. Some authors have suggested that citizen science must adhere to the scientific principles such as sound methods, clear research questions, and data validity [Stevens, et al., 2014]. Others have emphasized training, data colleciton, feedback, and research process managment [Bonney, Ballard, Jordan, et al. 2009]. But, most agree that the researcher-citizen scientist approach is challenging and complex on a number of levels [Binot, Dubosz, Promburom, Phimpraphai, Cappelle, Lajaunie, Goutard, Pinyopummintr, Figue & Roger, 2015; Cooper, et al., 2007; Newman, Graham, Crall, & Laituri, 2011].

A number of typologies for citizen science have been described often citing issues of passive/active engagement [Cohn, 2013], co-creation[Bonney, et al., 2009], community commission [Bonney, et al., 2009], expertise [Thibault, White, Hulbert, & Ernest, 2011], as well as other criteria. According to Haklay(2013), there a 4 levels of citizen science engagement ranging from the simplest form as crowdsourcing to extreme citizen science. These categories are described based on the varying levels of cognitive (intellectual) engagement, components of involvement (i.e., data collection, analysis, dissemination), and level of collaboration.

Other authors have considered the type of study as critical in the success of citizen science efforts. For example, Gommerman and Moore (2012) indicate that studies, which are data collection intensive, utilize rigorous step-by-step protocols, and require big dat sets, are ideal.

Ultimately, however, it is the positive outcomes of citizen science projects in terms of skills, critical thinking, advocacy, and attitudes toward science (Bonney, et al., 2014). Most citizen science research projects are structured to enable citizens to have an active role, ideally for the educational benefit of both the citizens, who learn about subject matter and scientific process (Bonney, et al., 2009; Silvertown, 2009], and the projects, which are "remarkably successful in advancing scientific knowledge" [Bonney, et al., 2009, p .977].

4. Taking over

In this final section, we will explore an application (take over) of citizen science featuring a participative framework describing a project with a pastoralist community in Tanzania using the citizen science approach to build skills, share knowledges, and ultimately lead the scientific process to answer necessary and pressing needs within their context.

This project focuses on an effort to bring local and regional human health, animal health, and environmental agencies and professionals together to shift from an inward focused human health system to an outward upstream focus. The project is occurring in a rural area primarily comprised of traditional pastoralist people who have an intense dependency and inter-dependency with animal-human-environmental health, as well as conditions inextricably linked to water shortages, environmental constraints, and critical food insecurity.

The project brings together inter-disciplinary practitioners (animal-human-environment) and citizens to interface and share knowledges, insights, and understandings. The citizen scientists are being introduced to use of select equipment/technologies (such as basic drones, water testing equipment) as well as opportunities to identify trends, needs, and opportunities to improve the overall wellness of their community and its human/animal/environmental resources. In terms of citizen participation, there is an open science approach which includes bringing samples for testing, geo-positioning of locations of concern, visual monitoring using simple drones, and direct involvement in establishing and taking over the citizen science agenda for their community.

5. Summary

This paper has It is clear that citizen science is an equalizer and catalyst to democratizing of science and science literacy (Crain, et al., 2014). Citizen science by its nature embraces by diversity and is essentially borderless (Garbarino & Maons, 2014).

This paper considers citizen science as both opportunity and challenge. Historically, as citizen science was taking off, the reliance moved from simple reporting in low tech context to today's smartphone and internet enable ubiquity of sharing and co-creating knowledges. The citizen science environment has continually taken on the issues of society frequently and conversely inspired and inhibited by logistics, philosophical bent, and methodological capacities. We have seen how citizen science can make the unimaginable imaginable in terms of volume and reach of large scale project, through its accessibility and affordability profile. In the final component which features taking over, we reflect briefly on a unique project in a unique setting with a unique population as they met first met citizen science.

Ultimately, Bonney et al, (2014) put down the gauntlet by reminiding us that if we fail to embed citizen science the likelihood of "achiev(ing) positive outcomes for science and society (will remain) unrealised" (p. 1436).

References

Bhattacharjee, Y. (2005)/ Citizen scientists supplement work of Cornell researcher. *Science, 308*, 1402-03. http://dx.doi.org/1126/science.308.5727.1402

Binot A, Dubosz R, Promburom P, Phimpraphai W, Cappelle J, Lajaunie C, Goutard FL, Pinyopummintr T, Figue M, & Roger FL. (2015). A framework to promote collective action within the One Health community of practice: Using participatory modelling to enable interdisciplinary, cross-sectoral, and multi-level integration. *One Health, 1*, 44-48. http://dx.doi.org/10.1016/j.onehlt.2015.09.001

Bonney, R, Cooper, CB, Dickinson, J, Kelling, S., Phillips, T, Rosenberg, KV, & Shirk, J. (2009). Citizen science: a developing tool for expanding science knowledge and scientific literacy. *BioScience, 59*, 977-984. http://dx.doi.org/10.1525/bio.2009.59.11.9

Bonney, R, Miller-Rushing, JAL, & Parrish J. (2014). Next steps for citizen science. *Science, 343*, 1436-1437. http://dx.doi.org/10.1126/science.1251554

Cohn, JP. (2008). Citizen science: can volunteers do real research? *BioScience, 58*, 192-197. http:/dx.doi.org/10.1541/b580303

Conrad, CC, & Hilchey, KG. (2011). A review of citizen science and community-based environmental monitoring: issues and opportunities. *Environmental Monitoring and Assessment, 176*, 273-291. http://dx.doi.org/10.1007/s10661-010-1582-5

Cooper, CB, Dickinson, J, Phillips, T., & Bonney, R. (2007). Citizen science as a tool for conservation in residential ecosystems. *Ecology and Society, 12*, 11. https://doi.org/10.5751/ES-02197-120211

Crain, R., Cooper C, & Dickinson JL. (2014). Citizen science: a tool for integrating studies of human and natural systems. *Annual Review of Environmental Research, 39*(1):641–665.

Devictor, V, Whittaker, RJ, Beltrame, C. (2014). Beyond scarcity: citizen science programmes as useful tools for conservation biogeography. *Diverity and Distributions, 16,* 354–362. http://dx.doi.org/10.1111/j.1472-4642.2009.00615.x

Dickinson, JL, Zuckerberg, B, & Bonter, DN. (2010). Citizen science as an ecological research tool: challenges and benefits. *The Annual Review of Ecology, Evolution and Systematics, 41*, 149-72. http://dx.doi.org/10.1146/annurev-ecolsys-102209-144636

Freitag A, & Pfeffer MJ. (2008). Process, not product: investigating recommendations for improving citizen science 'success'. *PLOS One*. http://dx.doi.org/10.1371/journal.pone.0064079

Garbarino, J. & Maons, C.E. (2016). The power of engaging citizen scientists for scientific progress. *Journal of Microbiology and Biology Education, 17*(1), 7-12. http://dx.doi.org/10.1128/jmbe.v17i1.1052

Gommerman, L, & Monroe, MC. (2012). Lessons learned from evaluations of citizen science programs. EDIS publication FOR291. Gainesville, Florida: University of Florida. https://edis.ifas.ufl.edu/fr359)

Haklay, M. (2013). Citizen science and volunteered geographic information: overview and typology of participation, Chapter 7 (pp. 105-122). In: D. Sui, S. Elwood, M. Goodchild, (eds.), *Crowdsourcing Geographic Knowledge: Volunteered Geographic Information (VGI) in Theory and Practice*. Dordrecht, Netherlands: Springer Science+Business Media.

Hecht, J, & Cooper, CB. (2014). Tribute to Tinbergen: public engagement in ethology. *Ethology, 120*, 207–214. http://dx.doi.org/10.1111/eth.12199

History of the Christmas Bird Count. (2004). www.audubon.org/content/history

Jordan RC, Gray SA, Howe DV, Brooks WR, & Ehrenfeld JG. (2011). Knowledge gain and behavioral change in citizen-science programs. *Conservation Biology, 25,* 1148-1154. http://dx.doi.org/10.1111/j.1523-1739.2011.01745.x

Lidskog, R. (2008). Scientised citizens and democratised science: re-assessing the expert-lay divide. *Journal of Risk Rearch, 11*, 69-86. http://dx.doi.org/10.1080/13669870701521636

Newman N., Graham J., Crall A., & Laituri M. (2011). The art and science of multi-scale citizen science support. *Ecological Informatics, 6*, 217-227. http://dx.doi.org/10.1016/j.ecoinf.2011.03.002

Niven, DK, Sauer, JR, Butcher, GS, & Link WA. 2004. Christmas Bird Count provides insights into population change in land birds that breed in the boreal forest. *American Birds 58*, 10-20.

Silvertown, J. (2009). A new dawn for citizen science. *Trends in Ecological Evolution, 24*, 467-471.http:/dx.doi.org/10.1016/j.tree.2009.03.017

Stevens, M. Vitos, M., Altenbuchner, J., Conquest, G., Lewis, J., & Haklay, M. (2014). Taking participatory citizen science to extremes. *Pervasive Computing, 13,* 20-29. http://dx.doi.org/10.1109/MPRV.2014.37

Thibault KM, White EP, Hulbert AH, & Ernest SK. (2011). Multimodality in the individual size distributions of bird communities. *Global Ecology and Biogeography, 20*, 145–153. http://dx.doi.org/10.1111/j.1466-8238.2010.00576.x

NEW CONTEXTS OF FOREIGN LANGUAGE LEARNING AT THE UNIVERSITY: MICROLEARNING AND SOCIAL NETWORKS

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Abstract

The paper deals with the topic of supporting the processes of foreign language learning by means of mobile devices. The conceptual framework is provided by the phenomenon of "microlearning", which represents one of the current global educational trends, observable especially in the area of corporate learning. With regard to this particular theoretical perspective, the author presents the outcomes of the two-year action research carried out within the area of English language courses taught in the university context. The analysis is focused on the use of the social network Instagram as the specific "microlearning" tool stimulating the processes of the students' language "microproduction". The empirical evidence comprises the students' Instagram posts, i.e. the "microblogs" related to their particular photographs, and it also includes the learners' subjective perceptions of the learning potential of the social network Instagram, collected by means of a structured questionnaire.

Keywords: English language teaching, microlearning, eLearning, mobile learning, Instagram.

1. Introduction

The concepts of microlearning and social learning belong to the group of the most significant current learning and development trends. Over the past three years, their potential has been repeatedly presented especially within the field of corporate learning (Taylor, Dedhar 2016; Boller 2017) and high expectations in these two areas have been formulated also with regard to the upcoming period (Kumar 2017). Despite the obvious differences between these two phenomena in terms of the primary emphasis on specific learning formats enabling a person's individual growth in case of microlearning vs. the explicit focus on collaborative nature of social learning, their meaningful integration within the particular learning contexts seems to be capable of generating highly positive learning outcomes in various learning settings.

The complex area of foreign language learning represents one of the spheres where the analyses of the potential and limitations of the broad concepts of microlearning and social learning are highly desirable. Our primary perspective in this analysis is provided by the concept of microlearning in accordance with Hug's (2007, p.19) basic definitions in terms of its temporality and substance, i.e. "relatively short efforts and low degrees of time consumption" and "small or very small units and rather narrow topics". Recently, a very useful viewpoint has been offered Jimenez (2017) who calls for extending the scope of original ways of perceiving microlearning from the usual focus on the "form (videos, lesson, messaging, chatbots, spacing, smallness, etc.) of the content" towards the "impacts and values". Therefore, context-specific studies of the potential and limitations of microlearning, such as the ones focusing on the area of foreign language learning, might be considered as highly beneficial.

Our previous attempts to analyse the potential and limitations of microlearning from the perspective of foreign language curricula in the specific educational context resulted in pinpointing it as "a valuable tool which can be successfully integrated also into the foreign language courses taught in the area of higher education" (Brebera 2017a, p.13). However, some dilemmas related to the specific field of foreign language education were also listed, such as: "complexity of foreign language acquisition vs. single-topic focus of microlearning; long-term language development vs. episodic microlearning; social contexts of foreign language learning vs. microlearning via personal devices; holistic view of foreign language learning vs. microlearning training strategies" (Brebera 2017b, pp.87-88). Yet, these empirical investigations revealed not only a very high level of students' acceptance of various formats of microlearning, such as HotPotatoes activities, Duolingo and Kahoot within foreign language courses (ibid), which was predominantly expressed in terms of the generally proclaimed positives of

microlearning, i.e. spaced-out learning or learning on-the-go (see e.g. Sommerich 2017), but the huge potential was identified also in the area of students' "microproduction" by means of social media (Brebera 2017b, pp. 90-92). Besides, as a follow-up to Buchem and Hamelmann's (2010, p.4) general observation that "microlearning is also closely related to informal learning", we may conclude that the nature of foreign language learning in the current era of social networks appears to be to a large extent influenced by referring to some new roles of social media users, such as the one of prosumer, i.e. the person who consumes and produces media at the same time. Therefore, the current phenomena of microlearning and social networking demonstrate several significant areas of their mutual interdependence.

2. Rationale for the use of microlearning in foreign language courses

Since the concept of "microproduction" might be considered as one of the most beneficial potential outcomes of using the microlearning strategies with regard to the development of students' communicative competence, which represents the general aim of foreign language teaching, the role of social media as an integral part of foreign language courses is increasingly gaining in importance. However, as the use of social media still lacks a solid justification in educational theory and practice, there is a need for formulating a clear rationale for their use within foreign language courses.

In order to address the issues of implementing social networks into the foreign language courses, two influential models seem to provide the desirable basis for a theoretical conceptualisation: Salmon's socio-constructivist 5-stage model of e-learning (2000) and Puentedura's (2006) SAMR model of technology integration.

2.1. Salmon's 5-stage socio-constructivist model

Salmon's model (2000, p.29) provides a well thought-out plan of dealing with the complex task of e-learning design. Despite some later criticisms in terms of its rigidity, it might be still considered very inspiring for implementation of new e-learning strategies as it is based on widely accepted socio-constructivist theories of education. Besides, it comprises both the role of e-moderating as well as technical support, and it clearly defines several logical steps of the e-learning implementation process.

Due to various kinds of students' motivation for using social networks, the deliberate focus on providing support in the particular stages of the social network-based educational project represents a significant contribution to facilitation of learning processes, and thus it aims explicitly at fulfilling the expected learning goals. The model presupposes an active role of the teacher providing complex support to the participants of an online project within the following stages: arranging access to the project and ensuring motivation, providing opportunities for the participants' online socialisation, ensuring genuine information exchange, supporting the environment for collective knowledge construction, i.e. learning from one another, and hypothetically guiding the learners towards further development beyond the scope of the particular online project.

2.2. SAMR model

The model suggested by Puentedura (2006) proposes a 4-stage graded procedure of implementing ICT in classroom practice. From the perspective of learning, the first two stages of the model represent its enhancement while the second two stages attempt to reach for its transformation. In the enhancement stage, the letter "S" stands for substitution where the technology "acts as a direct substitute, with no functional change" (Puentedura 2006), unlike the following step of augmentation which is adding "functional improvement" (ibid) to the previous stage. Thus, these two initial stages form a desirable basic starting point for planned online projects by means of presenting them at the level of enrichment of teaching practice. In the transformational phase, the stages of modification in terms of "significant task redesigning" (ibid) and redefinition consisting in "creation of new tasks, previously inconceivable" (ibid), provide an essential qualitative change of teaching practice.

Triggering a social network project might be therefore perceived at the level of transformation of usual classroom practice. This assumption perfectly corresponds to the insights into the SAMR model offered by Romrell, Kidder and Wood (2014), who used it as a basis for evaluating m-learning activities, characterised as personal, situated and connected.

3. Instagram: microlearning format of a social network project

Our previous attempts to provide empirical evidence on various microlearning projects (HotPotatoes, Duolingo, Kahoot, Instagram) in the specific university context were carried out by means of a questionnaire survey of the students subjective perceptions (Brebera 2017a, Brebera 2017b). Subsequently, their findings were analysed with the intention of developing a potential further plan of innovative efforts. Thus, the deliberate focus on exploiting the potential of Instagram as a part of foreign language courses taught at the particular institution of higher education was justified by using the methodology of action research.

3.1. Action research methodology

Denscombe (2010, p. 126) characterises action research by listing its main features in terms of its practical nature, focus on change, cyclical process and practitioner's active participation in research. Since the introduction and analysis of the effectiveness of our Instagram project was carried out directly by the teaching practitioner in the particular educational setting, and due to the intentional changes realised in two cycles of using Instagram throughout the two-year period, the action research design proved its huge potential for dealing actively with the issues of teaching foreign languages in university context.

The effectiveness of the first action research cycle of the Instagram project implementation was analysed by means of the previously mentioned questionnaire survey (see Brebera 2017a, Brebera 2017b). Subsequently, the crucial intervention between the two cycles of action research consisted in the change of the teacher's role in each particular period and in applying a more disciplined approach grounded in the previously described Salmon's (2000) and Puentedura's (2006) procedural models.

3.2. Research context and participants

The research was carried out within the ESP courses taught at one of the technical faculties of the particular university in the Czech educational context. During the first action research cycle, the data were collected from 26 participants who chose the Instagram project from the list of several possibilities of credit requirement completion, while the second action research cycle was based on the participation of 7 students. The instructions for the students' participation were the same in both cycles, i.e. to create 3 to 7 Instagram posts (photos accompanied by "microblogs") related to the topics "Me and transport", "My job" or "Travelling with English", respond to the contributions of other participants and accumulate at least 100 lines of the text throughout the whole semester. The criteria for the Instagram posts were formulated both in terms of their topic-relevancy as well as the expected B2 language level.

3.3. Research results

3.3.1. 1st action research cycle. The first action research cycle took place throughout the whole academic year 2016-17. The quantitative analysis revealed that prior to the project, 53% of the participants did not have either any experience with the use of Instagram while, on the other hand, 12% of them responded that they had been already using Instagram in international contexts. This initial contextual information was confirmed in the qualitative stage of research where the respondents' diversity in expressing the reasons why they joined the Instagram project manifested both the aspects of curiosity ("It is a social network with big potential and I thought it would be a good idea to explore its functions." "I did not have Instagram and this was a good reason to establish it." "Now, after establishing Instagram I can use it further."), and experience ("I create Instagram posts in my everyday life so it was natural for me." "It seemed to be interesting, and as I had been already using Instagram I knew what I would be expected to do."). Other expectations demonstrated the appreciation of informal learning contexts ("It is something new. I think it is an entertaining way of seminar paper which helps the students more in practice than the standard presentation." "Modern app, photos, that's what the young people are interested in." "An informal method of learning English."), and an opportunity to use the language authentically for real life purposes ("An opportunity for sharing my own experience." "A possibility to describe my experience, look at the photos and comments of my classmates, and to learn something more about them." "I really have to concentrate when writing the text as a lot of my Instagram friends had an opportunity to see it."). Besides, several positive comments referred to a microlearning nature of the task ("As for the time, a relative freedom in task completion." "It was not demanding in terms of time." "An opportunity to work on the English project at any time and any place.").

Apart from the perceived positives of the Instagram project, the qualitative analysis implied also some of its potential drawbacks. They referred mainly to the aspects of organisation of an online project ("In the beginning, the colleagues did not participate actively in the project as almost nobody added

comments on the posts.") and the new experience of using the social network Instagram ("It was difficult to install Instagram to my mobile phone." "The biggest problem was to learn to use the app Instagram.").

A quantitative survey which focused on the expected role of teacher during the Instagram project revealed the students' preferences towards teacher's active participation. None of the students expressed the wish that the teacher should "stay aside", i.e. neither give "likes" nor express comments while 81% suggested that the teacher should monitor the students' posts by giving "likes", 54% of respondents opted for the teacher's model post and 42% expressed the wish that the teacher should actively comment on the students' posts.

Apart from the issues of students' engagement into the Instagram project, also the quality of their language microproduction was analysed against the criteria of written production representing the level B2 according to the Common European Framework of Reference for Languages. Owing to the informal contexts of language use, the students' microproduction did not fulfil the strict criteria of B2 level in case of 27% of posts, mainly in the categories of grammatical accuracy and coherence of written production.

3.3.2. 2ⁿᵈ action research cycle. Based on the modifications of the Instagram project after the analysis of the first action research cycle, the second action research cycle was triggered in winter semester of the academic year 2017-18. It started with a formulation of an action plan of further course of the Instagram project with the main aim of enhancing the quality of the students' language microproduction. In accordance with Salmon's (2000) socio-constructivist model and the students' preferences concerning the role of teacher in the project, the focus was on a higher level of teacher participation in the project with the aim of modelling the expected language production, offering correct language input and enriching the interaction patterns by providing conversational stimuli in the comments to the particular students' posts.

After implementing the action plan for the forthcoming period, the students' perceptions manifested the same tendencies as in the previous action research cycle, i.e. commenting on the opportunity to get more experience with social networks and perceiving the Instagram project within the foreign language courses as new and interesting. Unlike the previous action research cycle, a new trend appeared in terms of the desired higher level of freedom in the choice of the topics of Instagram posts, which might be interpreted as a logical phenomenon related to the specifics of language production in informal contexts.

However, the main aim of this second action research cycle in terms of enhancing the language quality of the students' posts was to a large extent fulfilled as the amount of the students' microproduction matching the B2 language criteria increased up to 80%. The intervention in terms of the higher level of the teacher's engagement in the Instagram project seems to influence the students' language development in a positive way.

4. Conclusion

The implementation of microlearning tasks within the foreign language courses has been continually demonstrating a huge degree of acceptance by university students. Stimulating the students' English language "microproduction" by means of using the social network Instagram proved to be successful, especially in terms of creating an authentic opportunity for communicating in a foreign language meaningfully and in a non-threatening context. Simultaneously, the use of social networks within formal educational contexts seems to place new demands on teacher who is expected to act in the roles of microlearning task facilitator, e-moderator and participant. To conclude, the use of microlearning tasks, which comprise a huge social learning potential, represents a very powerful future learning scenario based on the desired overlaps between formal and informal learning contexts.

References

Boller, S. (2017). *2017 Learning and Remembering Report.* Retrieved February 5ᵗʰ, 2018, from http://www.bottomlineperformance.com/2017-learning-and-remembering-report-free-download/.

Brebera, P. (2017a). Microlearning as an Integral Part of English Language Courses in Higher Education. In Kaščáková, E. & Kožaríková, H. (Eds.), *FORLANG: cudzie jazyky v akademickom prostredí* (pp. 8-14). Košice: Technická univerzita v Košiciach.

Brebera, P. (2017b). Microlearning in Foreign Language Courses: a Threat or a Promise? In Mesquita, A. & Peres, P. (Eds.), *Proceedings of the 16ᵗʰ European Conference on e-learning. ECEL 2017.* (pp. 85-93). Reading: Academic Conferences and Publishing International.

Buchem, I. & Hamelmann, H. (2010). Microlearning strategy for ongoing professional development. *eLearning Papers, 21(7)*, pp. 1-15.

Denscombe, M. (2010). *The Good Research Guide. For small scale research projects. Fourth edition.* Maidenhead: Open University Press.

Hug, T. (2007). *Didactics of Microlearning.* New York: Waxmann.

Jimenez, R. (2017) *Microlearning is The "It's-Always-There" Solution – Tip #157.* Retrieved February 5th, 2018, from http://www.elearninglearning.com/edition/daily-company-blog-white-label-2017-11-13?open-article-id=7520348&article-title=microlearning-is-the--it-s-always-there--solution---tip--157&blog-domain=blogspot.com&blog-title=vignettes-learning.

Kumar, S. (2017). *9 eLearning Trends for 2018.* Retrieved February 5th, 2018, from https://elearningindustry.com/elearning-authors/suresh-kumar-dn-2.

Puentedura, R. (2006). Transformation, Technology and Education. Retrieved February 5th, 2018, from http://hippasus.com/resources/tte/puentedura_tte.pdf.

Salmon, G. (2010). *E-Moderating. The Key to Teaching and Learning Online.* London: Kogan Page.

Sommerich, A. (2017). *3 Ways Microlearning brings relevance and engagement back to eLearning.* Retrieved February 5th, 2018, from https://blog.edapp.com/3-ways-microlearning-brings-relevance-and-engagement-back-to-elearning/.

Romrell, D.; Kidder, L.C. & Wood, E. (2014). *Journal of Asynchronous Learning Networks, 18 (2)*, pp. 1-15.

Taylor, D.H. and Dedhar, S. (2016) *L&D Global Sentiment Survey 2016.* Retrieved February 5th, 2018, from http://donaldhtaylor.co.uk/gss/.

OPEN BADGES – A NEW WAY TO DEMONSTRATE SKILLS AND LEARNING

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Abstract

Open badges are online representations of skills and accomplishments. Open Badge is an open standard developed by the Mozilla Foundation to recognize and demonstrate learning in the form of a digital image with embedded metadata. In Lahti University of Applied Sciences, open badges have been utilized as a more flexible and nuanced way of acknowledging the learning and skills of students and staff members. Lahti University of Applied Sciences has utilized open badges as a way of promoting staff competence and professional development. Open badges have been used to validate the pedagogical and digital expertise of teachers in a HR training program. Open badges can support the teacher in reflecting on their skills and teaching methods. Open badges help make the skill sets required visible and concrete with clearly defined criteria and detailed instructions on how to demonstrate the required skills. Using badges, teachers can then display and share their achievements online. The open badges can also help teachers recognize areas in which they need to develop their skills further. However, open badges are a new concept and there is a clear need to continuously communicate the idea and value of badges. Support has been organized by arranging training sessions linked to the skill sets represented by the open badges. Positive experiences have been gained from teachers making open badge applications in joint workshops and sharing best practices.

Keywords: Open badge, digital badge.

1. Open badges as online representations of skills and accomplishments

Following their emergence around 2011, digital badges began transforming the way learning and accomplishment are recognized. Digital badges, also known as microcredentials, are online representations of skills, abilities or achievements. Open Badge is an open standard developed by the Mozilla Foundation to recognize and demonstrate learning. Open badges give individuals, employers and educators a framework to represent the full range of skills they earn in different areas of life. Open badges are not limited to educational institutions: also other organizations and individuals can issue open badges. Increasingly diverse types of organizations are issuing open badges, including enterprises, community organizations, museums and libraries in addition to traditional institutions of higher learning. (Hickey, Willis & Quick 2015; Devedžić & Jovanović 2015.)

The Mozilla Foundation created the Open Badges Infrastructure (OBI) for issuing and managing digital badges with embedded metadata. Thus open badges have the potential to be evidence-based and verified digital representations of skills and achievements. The Open Badges Infrastructure is an open and free credential-issuing platform that acts as a validator between issuers and earners. Mozilla's Open Badge Infrastructure provides metadata that details the issuer's information, criteria for earning the badge, and if desired, a URL to evidence of the earner's mastery in addition to a digital image. This metadata is sent to the recipient with the digital image as well as stored on the issuer's servers. This way, the Open Badges Infrastructure provides a level of security and reliability that mere digital images do not. Open badges can contain specific claims about learning, detailed evidence supporting those claims, and links to additional claims and evidence. (Brandon 2013.)

Through rich metadata, digital badges offer transparency and depth into the learning and achievements of the learners which can then be reviewed by others (Gamrat, Toomey Zimmerman, Dudek & Peck 2014). Open badges have the potential to support learners to take ownership of their learning and support visualizing and illustrating learning and skills in an online environment. Earners can decide for themselves whether to accept the open badge and display the open badges they receive. One of the benefits of open badges is portability, which has the potential to increase the visibility of the earners'

skills in an online environment. A badge recipient can display badges in any online location, such as an e-portfolio, a website or social media.

Open badges offer new ways of motivating learners and scaffolding the learning process, while also promoting values such as openness and learners' agency, participatory learning practices and peer-learning communities. For institutions, increased visibility is one potential benefit. (Devedžić & Jovanović 2015.) The process of earning a badge is a form of feedback and well-designed badges can serve as signifiers of what knowledge and skills are valued, guideposts to help learners plan and chart a path, and as status mechanisms in the learning process. Open badges can offer more flexible ways to respond to the needs of a quickly changing working life compared to traditional credentials. The potential advantages of open badges include providing credentialing which might reflect a finer-grained and nuanced reflection of a person's skills or experience. Rather than guessing a person's skills from a single credential, stakeholders can gather a nuanced picture of a person's skills through a collection of smaller credentials. (Ahn, Pellicone & Butler 2014.)

2. Open badges in Lahti University of Applied Sciences

Lahti University of Applied Sciences (Lahti UAS) is an international multidisciplinary higher education institution located in the city of Lahti in Finland. Fields of study include culture, business, social and health care, technology, and tourism. Lahti UAS currently has around 5,000 students studying towards a Bachelor's or a Master's Degree. The number of full-time employees is around 371, with 162 teachers.

The aim of implementing open badges in Lahti UAS was to find more flexible and nuanced ways of acknowledging skills and accomplishments of both students and staff members and to explore new online tools to help visualize and illustrate learning and skills. For students, open badges have been used mainly as a supplement to the existing credential structure to recognize student achievements in a more nuanced way and to signal finer-grained skills. In this paper, the use of open badges in acknowledging the pedagogical and digital expertise of teacher is discussed in more detail.

An open badge strategy was developed in Lahti UAS to build guiding principles for open badge creation and issuing in order to create a meaningful, consistent and sustainable badge system and to avoid badge inflation.

Students have been actively involved in designing the open badge concept. A graphic design student designed the templates for the digital badge images. A group of IT students made requirement specification for an open badge management system and compared different options for open badge management systems based on Mozilla's Open Badges Infrastructure. Lahti UAS uses the Open Badge Factory (OBF, https://openbadgefactory.com/) developed by Discendum Oy as the platform to create, issue and manage open badges.

2.1. Open badges for teachers

One of the aims of implementing open badges in Lahti UAS is to make staff learning visible. Open badges are used as a way of promoting staff competence and professional development. A training program focused on developing the pedagogical and digital expertise of teachers (LOVE program) was implemented in 2016-2017. To provide customized workplace learning opportunities, a digital badge system was designed to recognize and validate pedagogical and digital skills. All teachers are required to demonstrate the acquired skills in their teaching and course implementations by the year 2020 the latest.

A pedagogical development group with representatives from all faculties and the student body was actively involved in the designing of the LOVE training program for teachers. An HR specialist and e-learning and educational technology specialists have been involved in the design and implementation of the program. A workshop with teachers was organized for designing the learning outcomes and criteria of open badges. The pedagogical and digital competence areas identified to be recognized with open badges are:
- future orientated thinking
- co-teaching
- transformative teaching practices
- assessment and feedback
- designing and implementing a learning process online
- utilizing digital tools in face-to-face classroom situations
- utilizing digital tools in collaborative work
- verifying skills online

Detailed criteria and learning objectives were specified for each competence area and badge images (shown in figure 1) were designed. Some of the work in designing the criteria and instructions for applying for the badges was done while the LOVE program was already in progress, which was an unfortunate setback.

Figure 1. Open badges for teachers in Lahti UAS.

The metadata of the open badges was defined both in Finnish and in English to enable the teachers to display the open badges in an international context and also to develop the open badges as tailored learning solutions for continuing education in the global market.

The open badges are intended to serve as signifiers of what knowledge and skills are valued and as guideposts to help the teachers plan their professional development. To earn a badge, teachers have to demonstrate the required skills in their teaching. Each open badge had an online application form with detailed instructions on how to demonstrate the skills and what evidence (as written descriptions, documents, links or screenshots) should be provided. For example, for the open badge on implementing a learning process online, the teacher was required to supply a link and access to an online course they had designed and implemented, substantiation of the methods chosen and course feedback. The course had to take place completely online and to have some other media in addition to written materials and assignments in order to promote versatile use of different media in supporting learning. For the digital collaboration badge, the teacher had to provide a link to a recording of an online meeting where they had taken active part in and a link to a cloud document where they had done collaborative writing with other colleagues.

Lahti UAS organized joint seminars in which teachers shared best practices or planned course implementations as well as workshops about the pedagogical use of digital tools and online environments. There was also a possibility for personalized support in the use of digital tools in teaching upon request. A Moodle platform contained resources and materials specified for each open badge and links to the open badges and badge applications together with all information about the LOVE training program. A discussion group in the organisation's Yammer was set up for teachers to share ideas and resources with colleagues across faculties.

A few teachers from all faculties were selected to act as peer mentors. The peer mentors' task was to support their colleagues in planning their professional development according to the learning objectives and criteria detailed in the open badges. Training on peer mentoring was organized for the teachers acting as peer mentors. The open badges and the evidence required to earn them was discussed with the peer mentors but due to problems with scheduling, this was done when the LOVE program was already in progress and first seminars had already been held. Each mentor was assigned a group of teachers with whom they organized regular meetings to share methods and best practices, try out new learning tools and support applying for open badges. E-learning specialists were also invited to some group meetings focused on the application of digital tools in teaching.

Positive experiences have been gained from teachers making open badge applications in joint workshops. Some faculties and support groups organized joint sessions in which teachers gathered evidence about their pedagogical practices and use of digital tools. An extra fee of 100 euros Smartum

benefit to use for exercise, cultural activities etc. was offered as an incentive for those who completed all eight badges by the middle of December 2017.

An HR specialist and a pedagogical specialist evaluated the applications for pedagogical open badges and an e-learning specialist evaluated the open badge applications related to the pedagogical use of digital tools in the OBF system. When evaluating the applications, we noticed that some parts of the applications were too vague or ambiguous. Because of the varied scope of courses on which teachers had demonstrated their skills, there had to be negotiations about alternative ways to demonstrate competencies in some cases.

By January 2018, the number of open badges earned by teachers was as follows (number of recipients of the open badge in brackets):

- future orientated thinking (63)
- co-teaching (92)
- transformative teaching practices (68)
- assessment and feedback (46)
- designing and implementing a learning process online (46)
- utilizing digital tools in face-to-face classroom situations (36)
- utilizing digital tools in collaborative work (44)
- verifying skills online (37)

Co-teaching clearly emerged as a strength among the teachers of Lahti UAS. However, there is still a long way to go until all 162 teachers have earned all the open badges.

2.2. Feedback on open badges

Three teachers who had earned all eight badges were interviewed for news published in the Lahti UAS intranet in autumn 2017. They felt the open badges encourage to reflect on your skills and to try out new methods and tools in teaching. Open badges also act as guideposts and confirmation that the teachers are progressing in the right direction. Open badges also encourage and challenge teachers to explore methods and tools out of their comfort zone.

Feedback about the LOVE program was collected with an online questionnaire in the beginning of the year 2018. The response rate was unfortunately quite low, only about 13% (21 out of 162 teachers). The feedback questionnaire was focused on the LOVE program as a whole. The questionnaire also included open questions specifically about the use of open badges:

- How have you experienced the open badges in making your skills visible?
- How accurately did the open badges of the LOVE program represent relevant pedagogical and digital skill sets? Are there some other competence areas that ought to be recognized with open badges in addition or instead of these?
- How do you see the open badges in recognizing staff competence in general?

19 respondents gave answers to questions about open badges. The responses concerning open badges were quite divided. Nine of the responses could be defined positive and eight negative. There were a couple of mixed reactions as well.

In most of the positive responses there were mentions that open badges helped the teacher reflect on their skills and make their learning visible. There were some comments that at first applying for open badges seemed to be forced or factitious but after they had earned badges, they realized that the process of collecting evidence for the badges helped in reflecting on their work and skills. At least for some teachers open badges served as signifiers of the knowledge and skills valued and as guideposts to help the teachers in planning their professional development, as originally intended.

In several of the negative responses there was a complaint that the purpose of the open badges was unclear. There were comments that open badges felt useless or naïve. There was also a comment that open badges are not suitable for adults, that they could be more suitable for students. This is a somewhat narrow viewpoint considering that university students are adults as well and not all Lahti UAS students are young or straight out of high school.

Many teachers also experienced applying for open badges to be stressful due to lack of time or resources or with the schedule of their courses. Several teachers hoped for more joint evaluating of courses and teaching practices and more mentoring and allocated support.

A few respondents felt that the open badges did not offer them the possibility to make all their expertise visible and that the requirements in the applications were too detailed or strict. The point of the open badges was to acknowledge certain key competences that needed to be strengthened and made visible in the organization. This does not exclude that there can be many valuable competences in addition to these. The criteria of the open badges could be applied in different ways and if something was

missing, it could be negotiated how to demonstrate a skill alternatively. This would have needed to be communicated more clearly in the process of applying for open badges.

There were not any specific comments about the competence areas that the open badges represented other than a few approving responses about the competence areas in general. This would seem to indicate that the competence areas in themselves were not seen as irrelevant, even when the concept of open badges or the process of applying for them was critizised. Only one respondent had a suggestion that there could be an open badge for security and privacy policy in addition to these open badges.

3. Conclusions

Open badges are a new concept and more attention must be payed to continuously communicating the idea and aims behind open badges when implementing an open badge system in an organization. More detailed and specified support must be offered for staff in demonstrating their skills and applying for open badges. One of the mistakes made in the implementation was to start the LOVE training program before the open badges and instructions of the process of applying for them were completed.

In addition to existing teaching staff, all new teachers will be expected to demonstrate their skills by earning the open badges as well. Workshops and training sessions as well as the possibility for personalized support will continue to be offered in the future. At least for some teachers open badges served as signifiers of the knowledge and skills valued and as guideposts to help the teachers in planning their professional development, as intended. The aim is to further support and develop the original purpose of the open badges for both staff and students.

The next step is to extend the use of open badges from teachers to other personnel. Digital skillsets required from personnel have been recognized and open badge criteria and images have been designed for them. The open badges for other personnel will be implemented later in 2018 and some of the lessons learned from the LOVE program for teachers will be utilized in the implementation. Workshops focused on specific skills signified by specific open badges will be organized for teams and the application of open badges will be done more collaboratively.

References

Ahn, J., Pellicone, A. & Butler, B. S. (2014). Open badges for education: what are the implications at the intersection of open systems and badging? *Research in Learning Technology*, *Volume 22, (2014)*. Retrieved February 1st, 2018 from http://www.researchinlearningtechnology.net/index.php/rlt/article/view/23563

Brandon, B. (2013). Open badges: Portable credentials for learning. *Learning Solutions Magazine*. Retrieved February 2nd, 2018 from: http://www.learningsolutionsmag.com/articles/1094/open-badges-portable-credentials-forlearning

Devedžić, V. & Jovanović, J. (2015). Developing Open Badges: a comprehensive approach. *Educational Technology Research & Development. Aug2015, Vol. 63 Issue 4*, 603–620.

Gamrat, C.; Toomey Zimmerman, H.; Dudek, J. & Peck, K. (2014). Personalized workplace learning: An exploratory study on digital badging within a teacher professional development program. *British Journal of Educational Technology Vol 45 No 6 2014*, 1136–1148.

Hickey, D. T., Willis, J. E. & Quick, J. D. (2015). Where Badges Work Better. *Educause Learning Initiative. Brief.* Retrieved February 2nd, 2018 from: https://library.educause.edu/~/media/files/library/2015/6/elib1503-pdf.pdf

MANAGEMENT OF BEHAVIOR PROBLEMS OF CHILDREN WITH AND WITHOUT DISABILITIES: GREEK PARENTS' OPINIONS

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Abstract

The role of family is extremely important in child's social development and the parenting style can be either a protective or a risk factor (e.g. Earle, 2013). Specifically, according to previous studies, parents' attributions about child behavior problems and discipline techniques are considered to affect the development and persistence of conduct problems (Dix, 1993).

The purpose of the present study was to investigate parents' opinions concerning the use of behavior management strategies. Research questions of the study were (a) which strategies parents use for behavior problems management and (b) if there are differences concerning the use of behavior management strategies between parents of children with and without disabilities. Parent Practices Interview (PPI: Webster-Stratton, 1998) was used as an instrument in the particular study, in which 110 parents of children with and without disabilities have participated. The sample was randomly selected and came mostly from cities in Central and North Greece.

The results show that, in general, parents manage behavior problems mostly by using positive verbal discipline strategies, which is in contrary to previous study of Harman and Blair (2016) according to which parents manage behavior problems by stating clear expectations. Also, there seems to be no statistical significance concerning parenting practices between parents of children with and without disabilities, except for the subscale of appropriate discipline with parents of children with disabilities using more such strategies.

Keywords: Parents' opinions, behavior management strategies, children with and without disabilities.

1. Introduction

The role of family is extremely important in child's social development and is either a protective factor, such as effective parenting style, or a risk factor for generating or escalating behavior problems (Devi, 2014; Earle, 2013; Aynola & Nurmi, 2005; Patterson, & Dishion, 1985), which are often the hardest aspects of their child's problems to deal with (e.g. Earle, 2013). Of course, parents' attributions about child behavior problems and discipline techniques are considered to affect the development and persistence of conduct problems (Dix, 1993), so parenting style and techniques were the aim of various studies (e.g. Aynola, & Nurmi, 2005; Snyder, Cramer, Afrank, & Patterson, 2005).

According to studies, there are 3 types of parenting styles (Aynola, & Nurmi, 2005; Patterson, & Dishion, 1985): a) *Authoritarian*: parents are demanding, but not responsive, they expect their orders to be obeyed without explanation, they favor punitive methods and they do not encourage verbal give and take with the child, b) *Authoritative*: parents are both demanding and responsive, they monitor and impact clear standards for conduct, they are assertive, but not intrusive and they share with the child reasoning behind their policy, and c) *Democratic/permissive*: parents are highly responsive, but not demanding or directive, they are lenient, set no behavior rules and avoid confrontation. Other researchers also add the *neglecting/uninvolved* type (Devi, 2014; Earle, 2013), according to which parents are neither responsive nor demanding and seem not to care what their children do or become.

There seems to be a correlation between parenting style and children's behavior problems and indeed a correlation between certain parenting styles dimensions e.g. the mother's affection in combination with her authoritarianism, which conveys confused messages to the child and worsens the behavior problems (Aynola, & Nurmi, 2005). Certainly, no one could state that parenting a child is an easy task and in conjunction with the daily care demands, emotional distress, interpersonal difficulties, financial problems and adverse social consequences it causes stress to parents of children with disabilities (e.g. Gupta & Singhal, 2004). Exactly due to family stress and distress, but also negative attributions, it seems to be a great challenge to use positive discipline strategies for management of behavior problems at home. Thus, a

wide range of parent training programs have been implemented and evaluated with significant positive effects having been found (e.g. Giannopoulou, Lardoutsou & Kerasioti, 2014), but prior to implementation of such programs of course, it is of great importance to specify the strategies and techniques used by parents, as they report them, and this is the aim of the current study.

2. Aim of the Study – Research Questions

The aim of the current research is to investigate parents' opinions of their management of their children's behavior problems. Specifically, to achieve this purpose, the following research questions were formulated:

a) Which strategies do parents use for behavior problems management?

b) Are there differences concerning the use of behavior management strategies between parents of children with and without disabilities?

3. Methodology

3.1 Participants

Participants in the current survey were 110 parents /caregivers from Central (31.5%), North (57.7%), South Greece (5.4%) and Greek islands (5.4%). Mostly mothers (83.8%) completed the questionnaire and only 12.6% fathers and 3.6% guardians, who are authorized to act as the child's parent (in the current study, the term *parents* will include both biological parents and guardians of a child).

Concerning children, about which the questionnaires were completed, 64.8% were boys and 35.2% were girls. The age groups and the percentages were as follows: 0-5 years old (1%), 6-14 (95%) and 15-20 (4%). As for the diagnosis, there were 54.9% children without disabilities and 45.1% with disabilities (of which: 23.9% with autism, 0,9% with cerebral palsy, 5.5% with Asperger syndrome, 7.3% with mental disability, 6.4% with ADHD and 1.8% with learning difficulties).

3.2 Procedure and Analysis

The survey was conducted during school years 2015-16 and 2016-17. Initially, there was a written contact with the participants to inform them about the aim of the survey. The questionnaires were anonymously completed either in written form or in google form available online by the researcher. The answers were analyzed with the statistical package SPSS 24.0 so as to extract results concerning the research questions.

3.3 Instrumentation

Parents completed the Parent Practices Interview (PPI: Webster-Stratton, 1998), which was utilized in this study. The instrument, which was translated in Greek with the two-way translation method after written permission from the IY project, is a 72-item questionnaire adapted from the Oregon Social Learning Center's Discipline Questionnaire and revised for young children.

The Parent Practices Interview is composed of seven subscales: a) Appropriate Discipline (12 items), b) Harsh and Inconsistent Discipline (15 items), c) Positive Verbal Discipline (9 items), d) Monitoring (5 items), e) Physical Punishment (6 items), f) Praise and Incentives (11 items) and g) Clear Expectations (6 items). The items in each section are offered on Likert scales, different for each section e.g. ranging from: 1-"Never" to 7-"Always" or from 1-"None or almost none" to 5-"All or almost all" e.t.c. depending on the type of question. Scoring directions were retrieved from the IY program's official page (http://incredibleyears.com/for-researchers/measures/).

3.4. Reliability

The reliability of the scales of parents' management techniques for the present study measured with Cronbach's Alpha are: a=.762 for Appropriate Discipline, a=.846 for Harsh and Inconsistent Discipline, a=.276 for Positive Verbal Discipline, a=.188 for Monitoring, a=.792 for Physical Punishment, a=.568 for Praise and Incentives and a=.687 for Clear Expectations. The reliability score for the whole questionnaire, also measured with Cronbach's Alpha, is a=.768.

4. Results

The total mean score of answers (M=4.98) for parents' positive verbal discipline shows that parents state they mostly use such strategies in managing their children's behavior problems. Next come Praise and Incentives (M=4.08), Appropriate discipline (M=3.73) and Monitoring techniques (M=3.33). The least used strategies seem to be Harsh and Inappropriate Discipline (M=3.00), Clear Expectations (M=2.32) and least of all Physical Punishment (M=1.27).

On the individual item level, concerning the subscale *Positive verbal discipline*, the most preferred (M=6.29) technique seems to be "discussing the problem with child or asking questions, in case of their child hitting another child" and the least preferred (M=2.64) is praising children when they do well. In the subscale *Praise and Incentives*, when the child behaves well or does a good job parents state they quite often (M=6.52) give their child a hug, kiss, pat, handshake or "high five and the least used (M=2.41) technique in the same occasion is considered to be giving points or stars on a chart. Concerning the subscale *Appropriate Discipline*, parents state that when their child fights, steals, or lies they will most likely (M=5.64) punish their child and they will least likely (M.=1.85) having the child correct the problem or make up for his/her mistake in case of non-compliance. In the subscale of *Monitoring*, parents state that at 75% of the time (M=4.31) they know where their child is when s/he is away from their direct supervision, while within the last 2 days their child was involved in activities outside home without adult supervision only for less than ½ an hour (M=2.28). As for the subscale *Harsh and Inconsistent Discipline*, Greek parents state that if their child hit another child, they would most probably (M=4.12) raise their voice, scold or yell and they would least likely (M=2.08) ignore their non-compliance. As for *Clear Expectations*, parents seem to slightly agree (M=4.20) that they have made clear rules or expectations for their child about going to bed and getting up on time, while when their child misbehaves they sometimes (M=2.66) give their child extra work chores. Last, concerning *Physical Punishment*, when their child misbehaves, they seldom slap or hit their child (but not spanking), while they almost never (M=1.15) slap or hit their child (but not spanking) in case of non-compliance.

In addition, T-tests and One Way ANOVA tests revealed (with statistical significance $p=0.036<0.05$) that parents of children with disabilities (M=4.04) use more appropriate discipline strategies than parents of children without disabilities (M=3.64). Concerning use of *Clear expectations strategies* from parents, statistical significance ($p=0.035<0.05$) was pointed out between children's gender with parents using more such strategies with boys (M=2.42) than with girls (M=2.13). There is, also, a statistically significant difference ($p=0.013<0.05$) between mothers (M=3.24) and fathers (M=3.90) concerning *Monitoring* of children. As for differences among groups of children depending on the type of disability, statistical significance ($p=0.001$) was revealed concerning the use of *Praise and Incentives* which seem to be used the most to children with learning disabilities (M=5.50) and the least of all to children with cerebral palsy (M= 3.54). Also, noteworthy is the statistically significant ($p=0.001$) result that *Clear expectations strategies* seem to be used the most to children with learning difficulties (M=3.50) and the least to children without disabilities (M=1.99).

5. Discussion

The aforementioned results of the present research were examined in comparison to results of foreign countries' results since it is the first study in Greece that examines the parents' management strategies of their children's behavior problems.

Therefore, as for the first research question, concerning which behavior problems management strategies parents use, according to the current study, Greek parents state that they mostly use *Positive Verbal Discipline strategies*, which is not consistent with previous studies of Harman and Blair (2016) in U.S.A. according to which parents manage behavior problems by stating *Clear Expectations*. This difference could be explained in terms of different cultural contexts, since U.S. mothers are often thought of as being highly verbal, but actually fell at the bottom of a five-culture comparison in Bornstein's research (2012).

Moreover, in the current study the most preferred *Positive Verbal Discipline strategy* seems to be "discussing the problem with child or asking questions", which is an inductive discipline strategy also highlighted by children in another study along with reinforcement of positive behaviors (Nixon, & Halpenny, 2010). Inductive discipline strategies were also associated with children's greater abilities to internalize standards and expectations and to self-monitor (Nixon, & Halpenny, 2010), so it is crucial for parents to use such strategies, so as to help producing better outcomes for their children.

Answering the second research question, concerning possible differences about the use of behavior management strategies between parents of children with and without disabilities, the current study's results indicate no statistical significance, except for the subscale of appropriate discipline with parents of children with disabilities using more such strategies. This result is in line with Putnam, Sanson and Rothbart's study (2002) that concludes that parents with more difficult children try to exert more positive efforts with them than with easier ones. However, Nicholson, Fox and Johnson (2005) state that parents of children with behavior problems tend to use more punishment in general (both verbal and corporal) and harsher techniques than other parents. So, results on this issue seem to be still ambivalent and the answer might be in methodological choices in each research.

Concerning *Praise and Incentives*, it is the least preferred technique when children do well, but when parents do praise, they state they quite often give their child a hug, kiss, pat, handshake or "high five" rather than give points or stars on a chart. Their preference to social reinforces might be expected as they

are cost-effective, easily available whenever needed, in contrary to charts, which are not always easy to use. Praising children is especially important, as Williams et al. (2010) found that parents that reinforce children's positive behaviors and prevent problem behaviors have children with less frequent challenging behaviors. On the other hand, in another study most parents reported praising their children often and criticizing their children rarely, but parents were observed to criticize their children nearly three times more often than they praised them (Swenson, Ho, Budhathoki, Belcher, Tucker, Miller, & Gross, 2016). Therefore, the parents' reports of use of praise could be questioned in terms of truthfulness.

As for the subscale *Harsh and Inconsistent Discipline*, parents with and without disabilities state that if their child hit another child, they would most probably raise their voice, scold or yell and they would least likely ignore in case of non-compliance. This result is consistent with the study conducted by Norlin, Axberg and Broberg (2014), who postulate that there was no difference in harsh parenting practices between parents of children with and without disabilities and also in accordance with Patterson and Dishion's (1985) study which indicates that parenting practices associated with the development of conduct problems include inconsistent and harsh discipline and low nurturing. In addition, parents state that they consider punishing their child when their child fights, steals, or lies, which might be explained by the notion that behaviors they choose to punish are considered important deviant behavior (fight, stealing, and lying etc.), so they might want to be stricter to diminish them.

Furthermore, as far as *Physical Punishment* is concerned, parents in this research state that when their child misbehaves, they seldom or almost never slap or hit their child (but not spanking). This is quite a considerable outcome, because even though *Physical punishment* is related by some researchers with immediate obedience, it contains no message about alternative, appropriate behavior, focuses child's attention away from the consequences of their behavior for others and, according to meta-analysis of 27 studies, is highly correlated to child aggression (e.g. Thompson Gershoff, 2002).

Concerning children's gender as a variable, the only statistically significant difference pointed out is in the use of Clear expectations strategies, with parents using more such strategies to boys than girls. This is in contrast to other researches (Kerr, Lopez, Olson, & Sameroff, 2004; Straus, & Stewart, 1999; Smetana, 1989) according to which gender of parent and child are important in terms of Harsh Discipline and specifically boys at all ages seem to be more likely to receive harsh physical discipline (Straus & Stewart, 1999).

Finally, a result of the current study is that parents use more *Praise and Incentives strategies* to children with learning disabilities than to children with other types of disabilities. These children are vulnerable to low self-concept (Elbaun, & Vaughn, 1999), so maybe, exactly due to that, their parents accordingly attempt to boost their children's self-esteem by praising. Also, noteworthy is the result that *Clear expectations strategies* seem to be used more to children with learning difficulties, even more than to children without disabilities. Possibly, parents of children with learning disabilities facing the impact of processing deficits associated with Learning Disabilities (Rourke, & Fisk, 1981) feel the need or may have been advised by experts to clearly state their expectations to their children with learning disabilities.

In conclusion, Greek parents in this study state that they overall use *Positive discipline strategies*, either in the form of *Positive Verbal Discipline* or *Praise and Incentives*. However, they also use, in a lesser extent, *Harsh and Inconsistent Discipline* strategies without any differentiations between children with or without disabilities and irrelevant of child's gender or age. Certainly, limitations should be noted, as our research is based on subjective measures, so there is a risk for overstating positive behavior (Gupta, & Singhal, 2004) and, in addition, the number of participants does not allow for generalization of results.

Taking everything into consideration, even if it is the first study in Greece on this issue, it raises the hope for it to be a starting point for further research on how parents choose to manage their children's behavior problems. Moreover, the results of the current study contribute in the global research on the specific domain, since it is essential for researchers who design parent trainings to gather information on parents' management strategies prior to any design or implementation.

References

Aunola, K. & Nurmi, J. (2005). The Role of Parenting Styles in Children's Problem Behavior. *Child Development, 76*: 1144–1159.

Bornstein, M. (2012). Cultural Approaches to Parenting. *Parenting Science and Practice, 12*(2-3), 212–221.

Earle, J. (2013). *Growing up in the UK – Ensuring a healthy future for our children.* Ed.: Foyle, G. British Medical Association (BMA) Board of Science (BMA) publications unit. Retrieved on 15/8/2017 from https://www.bma.org.uk/collective-voice/policy-and-research/public-and-population-health/child-health/growing-up-in-the-uk

Dix, T. (1993). Attributing dispositions to children: An interactional analysis of attribution in socialization. *Personality and Social Psychology Bulletin, 19*(5), 633-643.

Elbaum, B. & Vaughn, S. (1999). Can school-based interventions enhance the self-concept of students with learning disabilities. *The Exceptional Parent, 29* (9), 92-94.

Giannopoulou, I., Lardoutsou, S., & Kerasioti, A. (2014). CBT training program for the management of young children with Behavior problems: A pilot study. *Hellenic Journal of Psychology,* 11, 241-257.

Gupta, A., & Singhal, N. (2004). Positive perceptions on Parents of Children with disabilities. *Asia Pacific Disability Rehabilitation Journal, 15* (1), 22-35.

Harman, A., & Blair, R. (2016). *The Incredible Years Preschool/Early Childhood & School Age BASIC Parent Series FY 2015-2016*, North Carolina Outcomes Evaluation, Executive summary prepared for Prevent Child Abuse North Carolina.

Jones, M., Eyberg, S., Adams, C., & Boggs, S. (1998). Treatment Acceptability of Behavioral Interventions for Children: An Assessment by Mothers of Children with Disruptive Behavior Disorders. *Child &Family Behavior Therapy, 20*(4), 15-26.

Kerr, D., Lopez, N., Olson, S., & Sameroff, A. (2004). Parental discipline and Externalizing behavior problems in Early childhood: The roles of Moral regulation and Child gender. *Journal of Abnormal Child Psychology, 32* (4), 369-383.

McKee, L., Roland, E., Coffelt, N., Olson, A.L., Forehand, R., Massari, C., Jones, D., Gaffney, C. & Zens M.S. (2007). Harsh discipline and child problem behaviors: The roles of positive parenting and gender. *Journal of Family Violence, 22*(4), 187-196.

Nicholson, B., Fox, R., & Johnson, S. (2005). Parenting young children with challenging behaviour. *Infant and Child Development, 14*, 425–428.

Nixon, E., & Halpenny, A. (2010). *Children's Perspectives on Parenting Styles and Discipline: A Developmental Approach*. The National Children's Strategy Research Series Office of the Minister for Children and Youth Affairs, The Stationery Office, Dublin.

Norlin, D., Axberg, U., & Broberg, M. (2014). Predictors of harsh parenting practices in parents of children with disabilities, *Early Child Development and Care, 184*(9-10), 1472-1484.

Patterson, G., & Dishion, T. (1985). Contributions of families and peers to delinquency. *Criminology, 23*, 63–79.

Phares, V., Compas, B. E., & Howell, D. C. (1989). Perspectives on child behavior problems: Comparisons of children's self-reports with parent and teacher reports. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1*(1), 68-71.

Putnam, S., Sanson, A., & Rothbart, M. (2002). Child Temperament and Parenting. In Bornstein M. (2002). Handbook for Parenting: Volume 1: Children and Parenting, 2nd ed., Mahwah, NJ: Erlbaum. Retrieved on 20-1-2018 from https://www.routledgehandbooks.com/doi/10.4324/9781410612137.ch9

Rourke, B. & Fisk, J. (1981). Socio-Emotional Disturbances of Learning Disabled Children: The Role of Central Processing Deficits. Bulletin of The Orton Society, 31, 77-88.

Smetana, J. (1989). Toddlers' social Interaction in the context of moral and conventional transgression in the home. Developmental Psychology, 25, 499-508.

Straus, M., & Stewart, J. (1999). Corporal Punishment by American Parents: National data on prevalence, chronicity, severity and duration in relation to child and family characteristics. *Clinical Child and Family Psychology Review*, 2, 55-70.

Snyder, J., Cramer, A., Afrank, J., & Patterson, G. (2005). The Contributions of Ineffective Discipline and Parental Hostile Attributions of Child Misbehavior to the Development of Conduct Problems at Home and School. *Developmental Psychology, 41*(1), 30-41.

Swenson, S., Ho, G., Budhathoki, C., Belcher, H., Tucker, S., Miller, K., & Gross, D. (2016). Parents' Use of Praise and Criticism in a Sample of Young Children Seeking Mental Health Services. *Journal of Pediatric Health Care, 30*, (1), 49–56.

Thompson Gershoff, E. (2002). Corporal Punishment by Parents and Associated Child Behaviors and Experiences: A Meta-Analytic and Theoretical Review. *Psychological Bulletin, 128*(4), 539-579.

Vieno, A., Nation, M., Pastore, M., & Santinello, M. (2009). Parenting and antisocial behavior: A model of the relationship between adolescent self-disclosure, parental closeness, parental control, and adolescent antisocial behavior. *Developmental Psychology, 45*, 1509–1519.

Webster-Stratton, C. (1998). *Parent Practices Inventory-Interview Form* (american version). Retrieved on 9/20/2012 from http://www.incredibleyears.com/Measures/forms/PPI-parenting-practices-interview-form.pdf.

Webster-Stratton, C. (1998). Parent Practices Inventory-Scoring Guide. Retrieved on 9/20/2012 from http://incredibleyears.com/for-researchers/measures.

#DISRUPTING#POSTSECONDARY#TEACHING

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Abstract

In early 2015, the Gates Foundation released the results of a survey that focused on educators' attitudes toward new teaching technologies and approaches. The results suggested that educators were aware of new developments in teaching, but that less than half implemented them in their classrooms (FTI Consulting 2015). Approximately 29% of respondents said that they had adopted a flipped classroom and 27% had used open source material to augment course content (FTI Consulting). A more recent Canadian research project identified that video was the most common tool used to transfer content and engage students in teaching and learning spaces (Squires, Turner, Bassendowski, Wilson, and Bens, 2017). So what does this mean for post-secondary educators? How are they to select from the palette of tools that are available and move them into their classrooms to support communities of learners (Bass, 2012; Bassendowski & Petrucka, 2015)? What criteria should drive the selection of tools and approaches? What should educators consider in terms of challenges and opportunities when it comes to using new teaching technologies and approaches? Classrooms are changing, the student body is changing, and pedagogical beliefs are changing. The diversity and digital connectedness of today's students have led many educators to take a critical look at ways to enhance, integrate, and/or disrupt the teaching and learning process because "...for disruptive innovations to flourish, they must be packaged in a way that delights customers" (Christensen, Aaron, & Clark, 2003 p. 31). This paper discusses the concept of disruption in teaching and learning as a method to connect and engage undergraduate and graduate nursing students in course content.

Keywords: Innovation, pedagogy, disruption, teaching, engagement.

1. Introduction

So what does disruptive teaching mean for post-secondary educators? Are educators supposed to select a variety of tools that are available and start using them with students regardless of their expertise in using the tool? What criteria should drive the selection of tools and approaches? What should educators consider in terms of challenges and opportunities when it comes to using new teaching technologies and approaches? Educators are aware of the vast selection of new tools but need to critically assess the value of each tool or strategy for assisting students meet course intents. Today's students are diverse and this characteristic has created a context for change and in order "...for disruptive innovations to flourish, they must be packaged in a way that delights customers" (Christensen, Aaron & Clark, 2003 p. 31).

"The main challenge is in winning over teachers to start using technology… If teachers see a clear benefit in using technology to enhance their teaching, the resistance automatically disappears" (Khambhati 2015, ¶3). Technology is a change in the traditional approaches in teaching and when educators see the benefit, they will take the time to learn it for effective and efficient classroom use (Torres Kompen, 2012, Questioning, ¶2). It is interesting to consider that at one time books were considered disruptive because they changed the teaching and learning paradigm (Dziuban, Graham, Moskal, Norberg, & Sicilia, 2018). Risk-taking needs to be encouraged and supported by administrators and decision makers with a view toward the long-term investment in the future (Boyer, 2013). For example, with a broad vision to improve and increase use of learning technologies in a Canadian university, a committee of senior administrators identified that the concerns and opportunities regarding the use of technology needed to be better understood to identify required supports, infrastructure, and policies (Squires, Turner, Bassendowski, Wilson, and Bens 2017). The research team created a flow chart that reflected diversity with the instructor/faculty group with respect to disciplinary area, stage of career, and in particular, the type of learning enabled by technologies using the 3E Framework of Enhance, Extend, and Empower (Smyth, Bruce, Fortheringham, & Mainka, 2011). One of the key findings about

selection of technology for teaching indicated that the most frequently selected and used technology was video to support student learning.

As Hanson (as cited in Shelton 2014) notes, such research studies often reflect the experience of innovators and early adopters rather than the majority of academics (Shelton, 2014). The majority of academics often work under the administrative approach of "don't re-invent the wheel" when it comes to design, development, and delivery of educational programs. But where is the wheel taking educators? "The wheel is a symbol and symptom of progress. The wheel is always contemporary and has always and will always align itself with the needs of the society that surrounds it" (Lincez 2012, pp. 78-79).

2. Disruptive teaching

The theory of disruption in higher educational learning began with Christensen's work about the theory of disruption (Christensen, Aaron, & Clark 2003). This theory provides educators with an alternative perspective with which to view more accessible and newly emerging technologies and innovations in any setting. Christensen et al. (2003) and Meyer (2010) believe that this theory and the disruptive innovation that follows are changing (or should be changing) educational settings across both undergraduate and graduate programs. Bass (2012) uses the term "disrupting ourselves" to advance an argument that the key source of disruption is generated by an individual's own practices, "...from the growing body of experiential modes of learning moving from margin to centre, and proving to be critical and powerful in the overall quality and meaning of the undergraduate experience" (p. 24). In the educational context, disruptive pedagogies originate from the introduction of radically new technology into higher learning that deviates significantly from the traditional teaching standard (Meyer, 2010). Historically, disruptive teaching became evident in the implementation of the computer in the 1950s to, most recently, the creation of online learning tools such as all the mobile devices (tablets, laptops, phones, etc.) along with social media examples of blogs, wikis, Twitter, Facebook, backchannels, and videoclips (Meyer, 2010; Rushby & Seabrook, 2008).

The term disruptive has both negative (Oblinger, 2013) and positive (Conole et al., 2006; Oblinger, 2013) connotations; for example, Shovein, Huston, Fox, and Damazo (2005) suggest that technology can disrupt the normal development of classroom relationships, leading to less autonomy and loss of identity for students and educators (p. 341). The initial emergence of such technology as smartphones or iPads, alters the already established flow of student/teacher interaction, thus creating a disruptive environment. According to Oblinger (2013), that same disruption can be transformed into intentional design, creating an empowered environment for both student and educator. Educators and students are encouraged to be critical thinkers with an open mind in order to meet the challenges of the future. In 2018, post-secondary institutions are educating students for careers that may not exist while they are students but students to be able to use technology and tools that are probably in a state of evolution.

3. Disruptive design examples

What about co-creation of content, living syllabi, and collaborative assessment strategies? How can these strategies be used to connect with students and to a certain extent have them direct aspects of their learning? What needs to be done to disrupt the syllabi? Reinvention brings to mind change, transformation, and transition. But when should educators start thinking about reinvention? It is based on the essence of teaching and learning, exploring solutions and options for change, and making a 'difference you can feel' in the educational context (Bassendowski & Salgado, 2005). The use of technology influences creativity in teaching and learning spaces.

In my own teaching and learning spaces, in addition to the newer tools and social media apps that have educational impact such as backchannels, Kahoot, and concept capture, I have been exploring different uses of specific technology to engage students in learning. For example, I have tried photomontage or composite photos where I use four to five (or more) of my photos to build one unique photo. Photomontage is described as the process and the result of making a composite photograph by cutting, gluing, rearranging, and overlapping two or more photographs into a new image (Gersh-Nesic, 2017). Although parts of each of my photos are recognizable to me, students see one finished photo. I present this strategy to students and then have them break down course content into various key concepts or perhaps have them help others understand the content. Students are given a composite photo - asked to reflect on what the photo is trying to say and then as a follow-up, students choose or are given individual photos related to key concepts and create their photomontage to depict course content.

Another strategy that I use is related to the idea in the past when sets of encyclopedias were purchased from an individual who travelled to family homes so that they could purchase the volumes from A-Z. Many Canadian families had a set in their homes and when a question came up that the family could not answer - the usual response was check the encyclopedia! I still have a complete set that was purchased by my grandparents in the 1920s and I find it fascinating to see what information is available in the various volumes and what seems to be completely absent in terms of today's common knowledge. If we think about information, teaching, and educators in 2018, content knowledge is remains a crucial aspect, but a set of encyclopedia books is of declining value when everyone can find out everything all the time with ubiquitous handheld devices. My 'encyclopedia' walks with me in my pocket wherever I go for ease of accessing evidence informed practice and the same occurs with students. My goal is to teach in a such a way that students need to bring mobile devices with them to the classroom in order to participate in the delivery and engagement with course content. I need to make them curious about content, comprehend, organize, synthesize, and communicate with the megabytes of information they carry in their pockets and hands.

Lastly, I recently read a blog posting where the word "paragogy" was mentioned and it immediately sparked my interest. Herlo (2014) suggests that paragogy addresses the need for useful and supportive contexts for students related to self-directed learning. Paragogy deals with analyzing and co-creating the educational environment as a whole by the peers, sharing their learning situations and experiences, and gaining from the tools of technology and is an adaptation of Knowles' principles of andragogy (Herlo). Each of Knowles's principles are adjusted to the peer-based learning context by turning the original by 90° with the challenge of determining how the principles can connect students in a more creative way in teaching and learning spaces. These connections provide the overlapping support when things are not going as smoothly as planned; these connections can help students get through a study week, recover from a poor grade, or just deal with general fatigue and disappointment in their program.

4. Challenges

"One of the hallmarks of disruptive technology is that it initially underperforms current mainstream products (Al-Imarah & Shields, 2018, p. 5) and tends to attract early adopters and fringe-thinking individuals. Another concern is that student assessment strategies have not kept up with the pace of the changes in technology in education (Wheeler, 2018). The challenge is to develop creative assessment strategies that reflect the capabilities of technology rather than that of the era of the printing press. On one hand, post-secondary institutions and educators encourage and expect students to work in a collaborative and cooperative manner during class time but then set up competitive expectations with exams, academic papers, and/or applications for bursaries or scholarships that depend on grade point averages throughout the semesters.

Rather than using the familiar essay assignment as part of the course work, the challenge is to create assignments that require original research and writing. Attention needs to be focused on revising or designing assessment strategies to support critical thinking and connect with students and their professional lives (Bassendowski & Salgado, 2005; Wheeler, 2018). The social media strategies such as concept mapping, blogging, wikis, gaming, and virtual environments have the potential for multiple uses in education but further research about development, implementation, and evaluation of these strategies to ensure that their use is supported by sound pedagogical practice.

5. Summary

Based on the results of a survey done in early 2015, the majority of faculty said that they were familiar with clickers, team teaching, and social media but had not used them or felt that they were not pertinent to their classes (FTI Consulting). Disruptive teaching encourages faculty to make informed choices to alter, revise, or change the approaches for teaching and learning through the use of technology. Faculty should explore disruptive design in post-secondary education from the perspective of critical thinking, decision –making processes, and classroom challenges. It is important to proceed through the disruptive process with a clearly determined pathway and not just proceed by chance. The tools of technology need to support the student learning outcomes and demonstrate a difference from both faculty and student perspectives. There are both opportunities and challenges with using disruptive teaching but faculty commitment and a belief that disruptive teaching makes a difference is essential for success.

References

Al-Imarah, A., & Shields, R. (2018). MOOCs, disruptive innovation and the future of higher education: conceptual analysis. Innovations in Education and Teaching International. DOI: 10.1080/14703297.2018.1443828

Bass, R. (2012). Disrupting ourselves: The problem of learning in higher education. *EDUCAUSE Review, March/April, 23–33.* Available: http://www.educause.edu/ero/article/role-disruptive-technology-future-higher-education

Bassendowski, S., & Petrucka, P. (2015). Disruptive by design: Making informed choices about the use of technology for teaching. *Ubiquitous Learning, 8*(4), pp. 15-22. Available: http://ijq.cgpublisher.com/product/pub.186/prod.263

Bassendowski, S. & Salgado, A 2005, 'Is Plagiarism Creating an Opportunity for the Development of New Assessment Strategies?' *International Journal of Nursing Education Scholarship*, 2(1.

Boyer, R. (2013). What are the barriers to innovation? *The Chronicle of Higher Education,* 30. Available: <http://search.proquest.com/docview/1441694943?accountid=14739>DOI:10.2202/1548-923X.1098

Christensen, C.M., Aaron, S., Clark, W. (2003). Disruption in Education. In M. Devlin, R. Larson, J. & Meyerson, J (Eds.). *The Internet and University* (pp. 19-44). Boulder, Colorado: *EDUCAUSE Review.* Available: <https://net.educause.edu/ir/library/pdf/erm0313.pdf>

Conole, G, de Laat, M, Dillon, T, & Darby, J. (2008). Disruptive technologies, pedagogical innovation: What's new? Findings from an in-depth study of students' use and perception of technology. *Journal of Computers and Education,* 50(2), pp. 511-524. Available: <http://dl.acm.org/citation.cfm?id=1332307>

Dziuban, C., Graham, C., Moskal, P., Norberg, A, & Sicilia, N. (2018). Blended learning: The new normal and emerging technologies. International Journal of Educational Technology in Higher Education, 15(3). DOI: 10.1186/s41239-017-0087-5

FTI Consulting. (2015). U.S. Postsecondary faculty in 2015. Available: <http://postsecondary.gatesfoundation.org/wp-content/uploads/2015/02/US-Postsecondary-Faculty-in-2015.pdf>.

Gersh-Nesic, B. (2017). What is a photomontage in art? ThoughtCo. Available: https://www.thoughtco.com/photomontage-definition-183231

Herlo, D. (2014). Paragogy. A new theory in educational sciences. *Journal Plus Education, 10*(1). Available: http://www.uav.ro/jour/index.php/jpe/article/view/213

Khambhati, N. Agenda for tomorrow. *Digital Learning.* Available: http://digitallearning.eletsonline.com/2015/01/agenda-for-tomorrow/

Lincez, M. (2012 summer). re-inventing the wheel. *MISC,* pp. 78-79.

Meyer, K. (2010). The role of disruptive technology in higher education. *EDUCAUSE Review Online.* Available: <http://www.educause.edu/ero/article/role-disruptive-technology-future-higher-education>

Oblinger, D. (2013). Disrupted or designed? *EDUCUASE Review,* 48(4). Available: <http://www.educause.edu/ero/article/disrupted-or-designed>

Rushby, N., & Seabrook, J. (2008). Understanding the past- illuminating the future. *British Journal of Educational Technology,* 39(2), pp. 198-233. Available: <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8535.2008.00829.x/abstract>

Shelton, C. (2014). Virtually mandatory: A survey of how discipline and institutional commitment shape university lecturers' perceptions of technology. *British Journal of Educational Technology*, 45, pp. 748–759. doi: 10.1111/bjet.12051

Shovein, J., Huston, C., Fox, S., & Damazo, B. (2005). Challenging traditional teaching and learning paradigms: Online learning and emancipatory teaching', *Nursing Education Perspectives, 26*(6), pp. 340-343. Available: <http://www.ncbi.nlm.nih.gov/pubmed/16429999>

Smyth, K., S. Bruce, J. Fortheringham, C. and Mainka. 2011. "Benchmark for the use of technology in modules*."* Edinburgh: Edinburgh Napier University.

Squires, V., N. Turner, S. Bassendowski, J. Wilson, and S. Bens. 2017. "Enhance, Extend, Empower: Understanding Faculty Use of E-learning Technologies." *Universitat Politechnica de Valencia, Valencia, 2017.* DOI: http://dx.doi.org/10.4995/HEAd17.2017.5508

Torres Kompen, R. (2012, December 26). Interview by B. G. Campbell [audio podcast]. Innovative aqqleadership: An interview with learning technologist Ricardo Torres Kompen. Available: http://tinyurl.com/InterviewQRDE

Wheeler, S. (2018, February 26). What is authentic assessment? Available: http://www.steve-wheeler.co.uk/#!/2018/02/what-is-authentic-assessment.html

PEDAGOGICAL EFFECTS OF ANIMAL-ASSISTED INTERVENTIONS IN CLASSROOM ENVIRONMENT

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Abstract

This study presents the pedagogical benefits of the classroom application of animal-assisted pedagogy and therapy. The first aim of our research was to develop a new set of pedagogical methods to aid the motivation and stress management of pupils in different types of elementary schools; in special educative environment, in normal and in inclusive classrooms. We focused on the effects of animal-assisted interventions on both the humans and the animals. Our methodology consisted of tests, classroom observations, case studies, and classroom interventions. According to our hypothesis, animal-assisted interventions decrease stress and increase learning motivation of first grade pupils to a large extent, and meanwhile, imprinted rabbits do not suffer any significant stress. For individual rabbits, there is a difference in terms of the time needed for gaining the necessary trust. There are differences in the explorative behavior of rabbits, too; and these determine their personality. The stress sensitivity of rabbits along with its change during the habituation procedure, can be determined based on their cortisol (stress hormone) level. Concerning rabbits, our main aim was to imprint them. We measured the degree of adaptive behavior, communication, social, and cognitive skills of pupils in the beginning of their school term and after a one-year interventional period, both for the animal-assisted groups and a control group. Based on our research, the development of the animal-assisted groups in their social and cognitive competences was significantly higher than that of the control group. In conclusion, by using animal-assisted methods, the development of emotional stability and learning attitude of students has significantly decreased the occurrence of different emotional disorders.

Keywords: Special education, animal-assisted intervention, classroom research, anxiety, learning motivation.

1. Introduction

Studies on animal-assisted activities recorded the protective effect of the relations between animals and humans by using several methods. The presence of the animal, its spontaneous behavior, its ability to social interactions are promoting the educative as well as the therapeutic processes (Csányi 1999; Fine 2001). The onset of the initial studies on animal-assisted interventions may be estimated for the second half of the 20th century, about the early sixties. Since that time, the involvement of animals appears more and more frequently in the pedagogical practices and in the health care as well as in the social care for the elderly.

AAI (Animal Assisted Intervention) includes all of the interventions performed with the involvement of animals in the process of development of abilities or in the therapy.

AAA (Animal Assisted Activity) is probably the most generally and most frequently used expression. AAA – the activity supported by the animals – represents an interactive training facilitated by the participation of animals. In the course of this procedure, the presence of the animal exerts a beneficial effect for the general condition and for the activity of the healthy or of the ill patients. Concerning its purpose, the interaction might be either of recreational or of pedagogical character, for improving the quality of life or for establishing the motivation of the client. The training activities facilitated by the animals do not represent direct interventions, - in the majority of the cases, the presence of an animal rather plays a role of influencing the comforts of the participants. Under such conditions, the presence of animals may reduce the sufferance due to the isolation, promoting social interactions, facilitating communication skills; moreover, the disposition to empathy might be also supported. In the course of

AAA interventions, the development of the spontaneity plays a considerably major role than in the processes of therapeutic practices.

AAP - the Animal Assisted Pedagogy, or in other context, according to another terminology, the AAE, Animal Assisted Education is a procedure in the course of which a competent pedagogue, experienced in the assisting animal's nature and conscious of his purpose, conducts the educative process with the intention to accomplish his pedagogical concept.

Studies of Wilson (1984) led to the concept of biophilia, with respect to the reduction of the distress and anxiety (especially in relation to the decrease of pulse rate and of blood pressure). According to his view, human beings have a genetically determined tendency to establish contact with other living creatures. On the base of this presumption, humans are instinctively focusing on the phenomenon of life or on the life-like vital processes, in order to increase the chance of the perspectives for the survival. This might be of evolutionary origin, according to the statement of the author. The appearance of animals simultaneously represents a link and a tranquillizing agent for the client (Kruger and Serpell 2010).

According to our assumption, the presence of the animal and the direct contact with it may act as an aid to establish the optimal state of mind, facilitating the learning processes and reducing anxiety. Therefore, according to our concept, those children who have direct connection with rabbits in the course of an educative training, become more competent concerning their achievement and may show better progress in their learning attitude at the end of such developmental training, compared to the control group.

2. Material and methods

The participants of the present investigations were first grade children in elementary schools. Tests for measurement of the pupils' reactivity were used which could be evaluated by experts in pedagogy.

In order to detect the efficiency of animal-assisted pedagogical activity, pupils of two different classes of the first scholastic year of the elementary school were simultaneously tested. One group of the pupils studied in a school for no problematic children, the other class was organized for children of SNI and BTM classified according to the categories of the BNO codification system.

In order to take the stress levels into consideration in the pupils associated with the beginning of the school term, in both classes the experimental period started with a non-rabbit-assisted control period of six weeks. In the initial period of six weeks, children had no contact with rabbits. Subsequently, at regular intervals of six weeks, alternation of rabbit-assisted periods and non-rabbit-assisted periods were organized; each period lasted for six weeks. The timing of the ability tests was planned with caution; therefore, the organization of the ability tests did not interfere neither with the school programs nor with the holydays. In the animal-assisted periods, the rabbits were continuously present in the classrooms and they were tended, nourished and cleaned by the children themselves. In addition, training courses for their development of abilities were weekly organized by undergraduate students, candidates for educators to be specialized for handicapped children in future. The topics of each meeting were focused on rabbits; then, the children had the opportunity for a direct contact with the rabbits, by touching or by caressing them. Either of the animal-assisted or control periods, the anxiety state indicated by stress levels of the participants was measured in every third week, according to the Child Behavior Checklist, CBCL (Achenbach 1991; translated by Gádoros 1996). This is a qualified test, a questionery suitable for the screening of the emotional lability and of behavioral disorders in age-groups of scholars of 7-14 years, standardized on the base of data obtained in 1600 children (Perczel et al. 2005). Consequently, the results obtained by this questionery are not suitable for the diagnostics of psychiatric disorders, but they may be useful for the detection of the deviation of the individual data from the pattern of the mean average values standardized in the given series. For the evaluation of the answers corresponding to the 20 questions referring to stress, the following score system was applied:
- When the answer was „almost never" – evaluated for 1 point;
- When it was „never" – evaluated for 2 points;
- When it was „frequently" – evaluated for 3 points

So, the maximum of the total score values is 60 according to this system used for the evaluation of the individual data of each child. In our investigations, the children, when their score values reached 35, were classified as anxious or stressed children; within the range of scores of 30-35, children were classified as slightly stressed children; below 30 score values, the children were classified to be in the normal range of anxiety/stress levels. Only the results of those children were taken into consideration who participated in each ability test (children in school for non-problematic children: 19; children in integrating school: 8).

3. Results

Figure 1. Children's anxiety level.
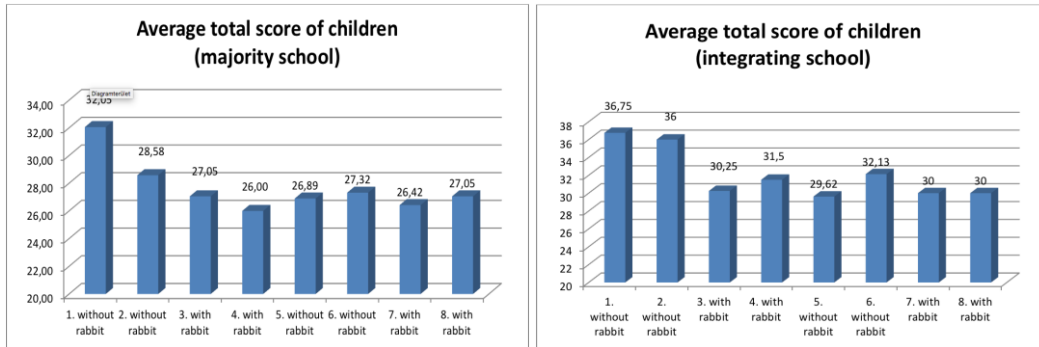
Average score values with respect to the stress associated with the beginning of the scholar term remain below 35 in the pupils of classes for non-problematic children. Compared to the results of this initial stage, decrease in the scores of the children was detectable in the six weeks period between the first and second tests, which could be attributed to the professional activity of the teachers. In consequence of their efforts, the adaptation to the new environment was successful in this group. Although, after this period, a fluctuation could be observed: a decreasing tendency was characteristic for the animal-assisted periods, otherwise, rather increasing values could be registered. This tendency was even more pronounced in the results of the pupils of the integrating school; the effect of the pedagogical activity could be also revealed in this group as reflected in the stress levels indicating a successful adaptation, but with lower degree, at least in the initial period. In contrast, at the time of the third ability test, after a rabbit-assisted period, the reduction in the amplitude of stress levels was more expressive than that observed in the group of the school for non-problematic children.

The comparison of the results observed in the two schools clearly demonstrate that the elevated stress levels could also be reduced in the children of the integrating school due rabbit-assisted education, although, the arousal levels could not be depressed into the range of the more lowered levels of groups of the non-problematic children. According to our score system, the classification for the children of the integrating school was changed from the category of „stressed children" to the category of the „slightly stressed children". On the other hand, on the base of the average value of the scores of non-problematic groups, the classification could be changed from the category of „slightly stressed children" to the normal range, in consequence of the same educative training.

Figure 2. Children's average anxiety level in the rabbit assisted and non-assisted period.
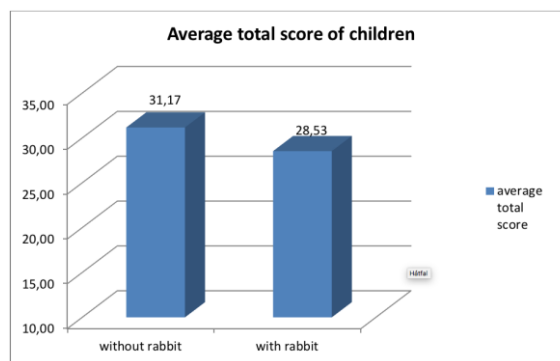
Summarizing the data of the animal-assisted and of the control periods, an 8,45% difference was detectable between the results of the two periods: the scores show 2,64 in average indicating the lowered level of arousal in the rabbit-assisted periods. This means that in average scores in all investigated children, stress levels could be reduced from the „slightly reduced" category towards „normal" range.

Figure 3. Children's average anxiety level in the majority and integrating schools.
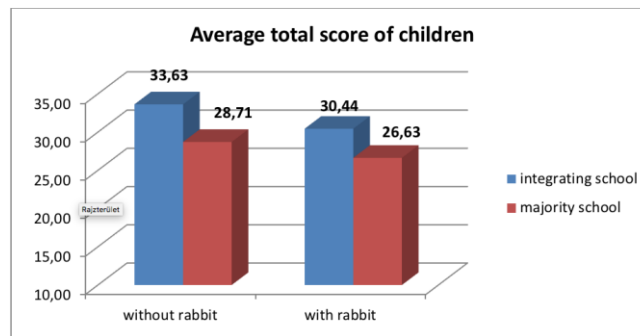
We also compared the induced changes observed in the two school systems. The presence of the rabbit induced a 9,48% improvement of stress levels in the integrating school group, while in the school of non-problematic children, the improvement was 7, 24%.

Considerable individual variations were detectable in the initial stage in the children and this was available also for the responsiveness to the rabbit-assisted interventions. Children were divided into three main groups, on the base of the initial state of anxiety, determined according to the score values, using the same categories of the score system as was used for the previous series of investigations. Thereafter, we have studied the changes in the scores of the groups of the two types of school systems in the subsequent periods. The total scores of individual children show an improvement of 5,06% in the rabbit-assisted period compared to the control period in the „stressed" children. The scores show 36,19 in average in the control period which were modified to 31,13 average value in the rabbit-assisted periods. Thereby, the classification of the children was changed from the „stressed" to the „slightly stressed" category. In some individuals, the reduction was 19-20 in the scores of stress levels at the end of the investigations, so, the difference in the scores between the two registered periods exceeded 10 in average.

Figure 4. Group of anxious children.

Ø – rabbitless period, R – rabbit assisted period, Ø avg – average of rabbitless period, R avg - average of rabbit assisted period, d (%) – difference in %

	1st child	2nd child	3rd child	4th child	5th child	6th child	7th child	8th child	
Ø	48	40	50	44	52	37	39	41	
Ø	46	40	50	43	41	26	34	30	
R	34	31	32	40	40	31	31	27	
R	42	26	37	38	37	21	23	25	
Ø	36	21	40	40	36	20	22	24	
Ø	41	22	41	39	36	27	25	27	
R	46	20	35	31	36	21	21	29	
R	41	20	37	40	39	20	20	25	
									avg
Ø avg	42,75	30,75	45,25	41,50	41,25	27,50	30,00	30,50	36,19
R avg	40,75	24,25	35,25	37,25	38,00	23,25	23,75	26,50	31,13
d (%)	2,00	6,50	10,00	4,25	3,25	4,25	6,25	4,00	5,06

Figure 5. Group of less anxious children.

	9th child	10th child	11th child	12th child	13th child	14th child	15th child	16th child
Ø	34	32	32	31	31	33	33	34
Ø	36	29	21	28	29	29	31	25
R	33	25	24	26	28	29	27	22
R	29	38	21	20	28	32	28	28
Ø	32	31	26	20	22	32	27	29
Ø	36	32	29	20	26	36	30	23
R	24	31	28	20	28	35	28	27
R	24	31	27	20	31	35	26	24
Ø avg	34,50	31,00	27,00	24,75	27,00	32,50	30,25	27,75	29,34
R avg	27,50	31,25	25,00	21,50	28,75	32,75	27,25	25,25	27,41
d (%)	7,00	-0,25	2,00	3,25	-1,75	-0,25	3,00	2,50	1,94

Figure 6. Group of normal stress level children.

	17th child	18th child	19th child	20th child	21th child	22th child	23th child	24th child	25th child	26th child	27th child	
Ø	24	29	28	24	29	29	22	24	29	28	26	
Ø	22	39	20	21	28	29	22	28	29	29	26	
R	20	36	22	22	30	28	20	25	26	20	27	
R	26	33	20	21	29	33	20	22	26	20	23	
Ø	21	36	22	22	32	25	22	36	27	20	27	
Ø	25	33	20	20	31	26	23	33	26	22	27	
R	25	38	20	20	32	32	21	22	29	20	23	
R	25	42	20	20	35	33	21	26	28	20	24	
Ø avg	23,00	34,25	22,50	21,75	30,00	27,25	22,25	30,25	27,75	24,75	26,50	26,39
R avg	24,00	37,25	20,50	20,75	31,50	31,50	20,50	23,75	27,25	20,00	24,25	25,57
d (%)	-1,00	-3,00	2,00	1,00	-1,50	-4,25	1,75	6,50	0,50	4,75	0,68	0,68

In the „slightly stressed" children, a 1,94% difference in the average scores in the two investigated periods were also observed, although, this difference was not so evident as in the group of the „stressed" children. In some individual cases, a 7% difference was evidenced, but in others, any change could be observed.

For children with the normal range of stress levels, a minimal (0,68%) improvement could be induced by the presence of the rabbit. In the majority of these children, no changes were registered compared to the initial state, moreover, in some individuals, an opposite tendency was induced. For this group, the animal-assisted training is unnecessary, while apparently, they could manage stress associated with the school life by themselves; by chance, they might be even troubled by the presence of the rabbit, being disturbed in their learning activity.

4. Summary

Our present data indicate the beneficial effect of the animal-assisted activity on the anxiety in children. A marked decrease in stress levels was detected during the rabbit-assisted intervention periods. When initial stress levels were higher, the animal-assisted activity was even more efficient in reducing the anxiety. Our results suggest that animal-assisted methods could be applied in pedagogy by completing the educational process.

References

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist 4/18 and 1991 Profile.* Burlington: University of Vermont, Department of Psychiatry, Amsterdam

Csányi V. (1999). *Az emberi természet. Humánetológia.* Vince Kiadó, Budapest (in Hungarian)

Fine A. H. (2001). *Handbook on Animal–Assisted Therapy Theoretical Foundations and Guidelines for Practice.* California State Polytechnic University Pomona, California, USA

Gádoros J. (1996). Szociodemográfiai rizikótényezők vizsgálata Gyermekviselkedési Kérdőív alkalmazásával. *Psychiatria Hungarica, 2*, 147–165. (in Hungarian)

Kruger, K. A., Serpell, J. A. (2006). Animal Assisted Interventions in Mental Health: Definitions and Theoretical Foundations. *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice*. Eds. Fine, A. H., USA: Elsevier, 21-38

Perczel F. D., Kiss Zs., Ajtay Gy. (2005). *Kérdőívek, becslőskálák a klinikai pszichológiában.* Országos Pszichiátriai és Neurológiai Intézet, Budapest (in Hungarian)

Wilson, E. O. (1984). *Biophilia*. Harvard University Press, Cambridge, UK

DEFINING COMPONENTS AND MEASURING OUTCOMES OF A HYBRID STUDY ABROAD PROGRAM

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Abstract

In the context of an increasingly global society, study abroad, at its best, is the strongest vehicle for driving global learning in preparing college students for the challenges in the 21st century. Despite of the controversy of short-term study abroad being as effective, this format of global learning is becoming the most popular and the fastest growing.

An overall literature review is conducted on history of study abroad in the United States. Recent facts and trends are investigated and explored.

Focused on the discipline of IT development, this presentation defines components and measurement instruments for developing and assessing a short-term hybrid program to its effectiveness. The misperception that a study abroad course is a 'travel course' is particularly addressed. Exemplary course components are identified for quality assurance. Concerns and disputes that have been scattered in the study abroad community are examined to raise awareness and to encourage a broader discussion.

The subject of this project is critical and significant in assuring quality delivery and assessment in short term study abroad programs in the related academic fields, such as IT business, development and management. Standard guidelines are reinforced incorporating with Intercultural Knowledge Value Rubric and Competence and Global Learning Value Rubric defined by AAC&U (Association of American Colleges and Universities).

Main components of the presentation consist of the followings:
- Literature review and facts of short term study abroad in general and in business schools
- Sample course contents/activities and students' projects
- Assessment pre/post questionnaires that can be easily adopted to other disciplines
- Results of pre/post assessment and analysis
- Four-Phase Study Abroad Assessment Chart for developmental continuum
- Discussions and recommendations

Keywords: Global learning, IT development, IT business, study abroad, assessment.

DEFINING TRANSDISCIPLINARITY

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Abstract

This article explores the concept of transdisciplinarity, primarily the challenges with its definitional clarity. It will center on the formation of a new degree program titled "Transdisciplinary Studies in Technology" at Purdue University. The first part of this article will analyze the results of an empirical study done by a marketing research firm, Simpson and Scarborough, hired by Purdue to gain insight into popular and industry opinions on the concept of transdisciplinarity. Data from this study largely suggests a confusion as to what is meant by this term. The second part of this article looks at the concept of transdisciplinarity from an academic perspective. The authors conclude that the concepts behind transdisciplinarity that make it powerful are the same concepts that make it so hard to define and communicate.

Keywords: Transdisciplinarity, education, systems theory.

1. Introduction

The Polytechnic Institute at Purdue University in West Lafayette, IN created a new degree program titled "Transdisciplinary Studies in Technology" (TST) in 2014. While this program is housed in the Polytechnic (formerly the College of Technology), it is meant to be a truly transdisciplinary program, working with colleges across the campus to include as wide a variety of disciplines as possible in order to solve project-orientated tasks and design problems.

One of the major challenges of getting the program off the ground was how to communicate the core notion of transdisciplinarity, which is generally understood as a dense concept not fitting traditional educational paradigms. This article will begin by exploring the popular perception of transdisciplinarity. Specifically, it will draw from a qualitative study Purdue University had ordered from the marketing research firm Simpson and Scarborough. The second section of this article includes a brief review of literature in order to analyze the results from this marketing study. We will identify the definition as we understand it and the challenges of communicating said concept.

2. Quantitative study

On one of the program's official websites for the Transdisciplinary Studies in Technology (TST) major, definitions are offered for the often-confused concepts of multi-, inter-, and trans-disciplinarity. As stated on the site, Petrie (1992) discusses multidisciplinarity as "the idea of a number of disciplines working together on a problem, an educational program, or a research study. The effect is additive rather than integrative" (Petrie, 1992). He defines interdisciplinarity as including more *integration*, rather than just addition. Finally, he notes: "The notion of transdisciplinarity exemplifies one of the historically important driving forces in the area of interdisciplinarity, namely, the idea of the desirability of the integration of knowledge into some meaningful whole" (Petrie, 1992). Relatedly, Russell, Wickson, and Carew (2008) claims transdisciplinarity "transcends disciplinary boundaries" (Russell, Wickson, & Carew, 2008). In these definitions, there's something of a hierarchy, in which the top term -- transdisciplinarity -- speaks to the complete removal of disciplinary silos. As opposed to simply combining disciplines, transdisciplinarity works towards a grand synthesis of knowledge. Thus, the trajectory of multi-, inter-, and trans-disciplinarity can be summed up as the movement from addition to integration to synthesis.

However, one pressing question in the formation of this program was how these terms were perceived by the general public. In 2017, the Polytechnic Institute at Purdue hired a research firm, Simpson and Scarborough, to do a quantitative research study about the perception of transdisciplinarity.

The details of this study are as follows: the study included employers across the U.S. with greater than 10 and less than 25,000 employees who have some responsibility and/or input in hiring decisions. In total, there were 403 respondents with a 4.8% margin of error.

The primary purpose of this study was to gauge employer familiarity with the term "transdisciplinary" and what this term implied. It further explored familiarity with related programs, implications as to what skills this program implied, and what was considered *not* important in the hiring process and often exposed several seemingly contradictory statements. Using this report and other university data, we hope to offer further insight on such topics as whether transdisciplinarity is viewed as a collection of minors and is even considered a discipline at all.

To begin, in regard to employers' familiarity of the terms multidisciplinarity, interdisciplinarity and transdisciplinarity, they reported they were least familiar with transdisciplinarity. In fact, only 17% of respondents felt that they definitely knew the meaning of this latter term (compared to 45% and 40% who claimed they definitely knew the meaning of multidisciplinary and interdisciplinary respectively). This fact is likely in part because 69% of respondents had not ever even heard of a program called transdisciplinary studies before. All in all, the concept of transdisciplinarity seems to be a fairly new concept for many to comprehend.

When asked to define all these terms, employers admittedly guessed what each word meant. Employers indicated that multidisciplinary connoted "*in-depth understanding of several areas* rather than being specialized in one area," "covering the *broadest spectrum* of fields," and was descriptive of an individual who is "*able to fulfill more than one job responsibility*". They perceived interdisciplinarity to mean "*exposing students to not just their own disciplines*, but also subject matter related to their specialization," yet the prefix "inter" suggested this exposure occurred "*within one specific area* rather than cross-functionality." Further, they understood transdisciplinarity as "*broad knowledge base of multiple, and variant subject areas* or skill sets (adaptability)" and "a few believed this might mean being well-versed in *intersecting disciplines*" (Simpson and Scarborough, 2017). All things considered, these definitions were not too far removed from how these terms have historically been understood in academia, which will topically comprise the second section of this article.

Despite many employers being unfamiliar with transdisciplinary studies, there were several positive responses as to what they believed the program entailed. Employers indicated that they believed an undergraduate program in transdisciplinarity suggested that learning occurred across multiple fields and required learners to tap into different sources of knowledge. One employer noted, "This program might cross over to several different disciplines. The person would be well educated and probably completed a unique program" (Simpson and Scarborough, 2017). Also, employers also believed that a transdisciplinary studies program suggested collaboration and teamwork would be involved and students would be prepared with tools to achieve a breadth of goals.

However, for each employer that was able to more-accurately-than-not describe essential characteristics of the TST program at Purdue, there were a few that expressed criticism and/or concern of the program and its name. One employer responded, "the name of the program is a little fuzzy and soft. I would need further understanding of the program to appreciate it," but did add, "this program might be ideal for an individual that was combining fields of study." Additionally, we had one response that fit a common bias held towards the few transdisciplinary programs in existence. It states, "this program would have multiple subjects that a student would be learning. I would think this program would be very similar to a general studies degree, where the students learns a little about everything." The idea that transdisciplinary studies equates to general studies (or alternatively a collection of minors) and the denigratory nature of this response is something that we have often had to fight against.

In addition to these responses, there are a few other biases employers might have brought to this study that we want to point out. First, it's worth noting that in terms of a college major, only 34% of those surveyed claimed it was "very important." Thus, there's a fundamental challenge in reconciling the importance of these statements on a new major with the fact that the majority of those surveyed *claim* to not see much importance in a major. Additionally, the majority of those surveyed claimed Complex problem solving skills and creativity were "not important." At our core (and much of education's core in general), complex problem solving skills and creativity are at the forefront of our goals. Further on this note, in comparing "broad range" skills vs. "field specific skills," 43% of participants said they were equally important. 29% said field specific skills were more important. 27% said broad range skills were more important. Thus, there was roughly an equal emphasis on broad range skills as there was on field specific skills. However, on this topic, several contradictory statements emerged from those participating. For example, many believed students in this program would have more depth while simultaneously worrying about their lack of specialized knowledges. This contradiction (that students have more depth to their studies but no specialized knowledge) casts doubt on the respondents' answers.

3. Literature review

Historically, transdisciplinarity as an educational prerogative emerged in the United States in the 1970s. The word itself appears to have entered the educational vernacular at a seminar on interdisciplinarity held at the University of Nice, jointly sponsored by the Organization of Economic Cooperation and Development and the French Ministry of Education. It was the Swiss psychologist Jean Piaget who is credited with coining the term (López-Huertas, 2013).

Bernstein (2015) claims that hindsight allows us to find significance in the optimistic origin of transdisciplinarity in terms of "the possibility for a new synthesis in higher education, technology, and science," noting "the timing was appropriate, since academic and government science had received a boost of glory in public opinion with the success of the Apollo program of manned moon landings" (Bernstein, 2015). He further notes that much of this early work focused on questions of epistemology and planning future universities and educational programs, a statement that gives a revolutionary flavor to the term. Similarly, Petrie identifies interdisciplinarity and transdisciplinarity as the first step to "reform general education" (Petrie, 1992). Once again, transdisciplinarity is framed not simply as a "discipline" in any traditional sense, but a modification to the educational status quo itself. Because of this perception, it is not difficult to see how transdisciplinarity can garner excitement and resistance in equal measures insofar as it has this historical and theoretical core of disruption. Thus, while the excitement around transdisciplinarity led research funding programs to elevate "interdisciplinarity, collaboration, and even transdisciplinarity in their calls for proposals" and led to growing interest in the public sector, misgivings about its "transgression" were and are always present: "As the *Convergence* report indicates, the same obstacles that have plagued interdisciplinary programs for decades still confront transdisciplinary initiatives. The pragmatic, philosophical, and political implications take center stage in the discourse of transgression" (Klein, 2014). This explanation seems to be the dual edged sword of transdisciplinarity: exciting yet dangerous.

Following a brief lull, transdisciplinarity re-emerged in the 1990s as a method of solving new, highly complex, global concerns. These concerns include topics such as climate change and sustainability. However, they quickly moved into fundamentally every other area as well. There are two points to make here. First, transdisciplinarity today is characterized by its focus on "'wicked problems' that need creative solutions (Bernstein, 2015). Relatedly, echoing Wolfgang Korhn in *The Oxford Handbook of Interdisciplinarity,* Frodeman (2014) also questions to what extent both inter- and trans-disciplinary works consist of "one-offs" that resist generalization. The mixture of viewing transdisciplinarity not through a disciplinary lens but through individual projects that resist generalization explains part of the confusion of the term indicated in the study in our first section. People may have trouble grasping the term because there fundamentally is not one single concept to grasp. The idea itself is a fluid idea speaking of fluidity (i.e. ever-changing real world problems). Frodeman (2014) further aligned transdisciplinarity further with this sense of social purpose. In *Sustainable Knowledge: A Theory of Interdisciplinarity,* he associates transdisciplinarity with co-production of knowledge by actors beyond academic walls in the public and private sectors. Hence, transdisciplinarity is a plural concept changing with the winds so to speak It does not change solely in academic circles but is a response to real-world, social situations and problems.

Second, there is a further notion behind transdisciplinarity that speaks not only to individual projects (that may blend disciplines), but one that speaks to transdisciplinarity as the evolution of disciplines themselves:

> Suffice it to say here that is it more likely that if interdisciplinary is constructed as multidisciplinary, as a juxtaposing of established disciplines, one is likely to view interdisciplinary efforts as artificial. On the other hand, the kind of efforts we have recommended seems to require some commitment to a natural evolution of disciplines under what may be called "transdisciplinarity," that is, to a recognition and attempt to view different disciplines as related through some principle of interaction more fundamental than any one of them (Kockelmans, 1979).

Kockelmans (1979) makes two important points here. First, he asserts that disciplines evolve under this thing called "transdisciplinarity." It's also worth noting that he refers to these evolutions as "natural." In other words, there's the implicit claim here that this movement (evolution) is towards a greater state of being. Second, he claims that transdisciplinarity -- in addition to being an arguably superior level of evolution -- is a new thing. That is to say, transdisciplinarity is not merely the combination of disciplines but is rather a different entity altogether. It is a creation of a new whole, a new whole that is constituted on *interactions* between various disciplines.

This talk of the interactions between disciplines recollects systems theory at its core. In fact, Petrie (1992) explicitly identifies transdisciplinarity with systems theory (Petrie, 1992). Similarly, other theorists view transdisciplinary research as a superior model for difference-making research by virtue of its various connections:

> Faced with the question of how to do transdisciplinary research, the network metaphor offers some suggestions. The network metaphor focuses our attention on process and interconnections. Rather than focus on research outcomes (e.g., peer-reviewed journal articles), networked research re-focuses attention to the process of conducting research. A network orientation privileges a commitment to making connections to other scholars, sectors, and stakeholders interested in the same problem from the beginning of a project (Sprain, Endres & Peterson, 2010).

Hence, what comprises transdisciplinarity here is not so much a discipline at all, but rather as an active entity based upon interconnectivity. It is not a discipline (a node) in this web, but rather the movement between them.

4. Conclusions

Given the above definition on interconnectivity and movement, transdisciplinarity refers not only to a means of problem solving but to an individual's thinking process itself. Thus, as a way of thinking, transdisciplinarity is to be understood as a verb instead of a noun. Researchers have identified four underlying attributes that transdisciplinary individuals have learned, practice, and possess. These include:

> (a) an appreciation of an array of skills, characteristics, and personality traits aligned with a transdisciplinary attitude; (b) acceptance of the idea that transdisciplinary individuals are intellectual risk takers and institutional transgressors; (c) insights into the nuances of transdisciplinary practice and attendant virtues; (d) a respect for the role of creative inquiry, cultural diversity, and cultural relativism. (Augsburg, 2014).

These comments on the practice of a transdisciplinary learner gel with the definitions of transdisciplinarity given above. Within the transdisciplinary classroom, the extent to which students have learned, will learn, possess, and strive to possess these attributes varies. Yet these are factors that we must consider in our employment of transdisciplinary pedagogical methodology. Such thinking is a conduit of "self-transformation" that is concerned with the creation of knowledge of oneself, one's lived experience, and intentionality in the exploration of new perceptions (Songca, 2006). We are not simply teaching material, but are teaching transformation.

The authors believe that this historical complexity of definition behind transdisciplinarity offers an explanation for the data gathered by the Simpson and Scarborough study in the first part of this article. Not only does transdisciplinary education offer a paradigm shift that moves away from traditional disciplines, but it further reconceptualizes the organization of existing disciplines themselves, paying more attention to the connections between these traditional silos than necessarily what is in the silos themselves. As such, there is a certain catch-22 when it comes to transdisciplinary education: the more innovative shape it takes, the harder it is to explain, particularly from a perspective of marketing to students and employers. This situation calls for an active agenda researching how to communicate this dense concept to those living in traditional academic spheres.

References

Augsburg, T. (2014). Becoming Transdisciplinary: The Emergence of the Transdisciplinary Individual. World
Futures, 70:3-4, pp. 233-247. Retrieved April 8, 2018 from https://doi.org/10.1080/02604027.2014. 934639
Bernstein, J. H. (2015). Transdisciplinarity: A review of its origins, development, and current issues. *Journal of Research Practice, 11 (1),* Article R1. Retrieved April 8, 2018 from http://jrp.icaap.org/index.php/jrp/ article/view/ 510/412
Frodeman, R. (2014). *Sustainable knowledge: A theory of interdisciplinarity*. New York, NY: Palgrave Macmillan.
Klein, J. T. (2014). Discourses of transdisciplinarity: Looking Back to the Future. Futures, Volume (63), pp. 68-74. Retrieved April 8, 2018 from https://www.sciencedirect.com/science/article/pii/S0016328714001311
Kockelmans, J. (1979). Interdisciplinarity and Higher Education. Pennsylvania, University Park: The Pennsylvania State University Press.

Krohn, W. (2010). Interdisciplinary cases and disciplinary knowledge. In R. Frodeman, J. T. Klein, & C. Mitcham (Eds.), The Oxford Handbook of Interdisciplinarity (pp. 31–49). New York: Oxford University Press.

López-Huertas, M. (2013). Reflexions on multidimensional knowledge: Its influence on the foundation of knowledge organization. Knowledge Organization, 40 (6), 400-407.

McGregor, S. L. T. (2014). Introduction to special issue on transdisciplinarity. World Futures, 70:3-4, pp. 161-163. Retrieved April 8, 2018 from https://doi.org/10.1080/02604027.2014.934622

Petrie, H. G. (1992). Interdisciplinary Education: Are We Faced with Insurmountable Opportunities?. Review of Research in Education, Volume (18), pp. 299-333. Retrieved April 8, 2018 from http://www.jstor.org/stable /1167302

Russell, A. W., Wickson, F. & Carew, A. L. (2008). Transdisciplinarity: Context, contradictions and capacity. Futures 40, pp. 460-472. Retrieved April 8, 2018 from http://www.sciencedirect.com/science/article /pii/S001632 8707001541

Simpson & Scarborough (2017). Purdue PPI: Quantitative Research Findings [PowerPoint slides].

Songca, R. (2006). Transdisciplinarity: The dawn of an emerging approach to acquiring knowledge, International Journal of African Renaissance Studies, 1:2, pp. 221-232. Retrieved April 8, 2018 from https://doi.org/10. 1080/18186870608529718

Sprain, L., Endres, D. & Peterson, T. R. (2010). Research as a transdisciplinary networked process: A metaphor for difference-making research. Communication Monographs, 77:4, pp. 441-444. Retrieved April 8, 2018 from https:// doi.org/10.1080/03637751.2010.523600

DESIGN THINKING APPLIED IN HIGHER EDUCATION
D-Think, a European Project for Innovating Educational Systems

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Abstract

As a response to continual social and technological transformations, many organisations call attention to the need for urgent changes to educational systems. Because of its collaborative and creative approach, its cross-disciplinary and human-centredness, Design Thinking is seen as a useful mindset and method to face the challenge of a new learning paradigm. Between 2014 and 2017, seven institutional partners from six different European countries developed the Research Project *D-Think*, supported by the Erasmus+ Programme of the European Commission. The goal of the *D-Think* project is the promotion of the application of Design Thinking as an innovation method to rethink not only learning/teaching methods but also pedagogical approaches, learning spaces or the role of educators. In this wider context an open access training course for HEI educators and VET trainers was developed, through which they can learn how to apply Design Thinking tools and how to get into its mindset. The methodological approach of the research process and the development of the *D-Think* course material was Design Thinking itself. By applying the DT model *Evolution 6*, the research team was led through the different DT phases, applying several tools of Design Thinking. The final outcome - the Toolkit and the Platform - were validated in three ways: 1. a "Train the Trainer" Course, 2. a Pilot Course with 104 participants, and 3. the *D-Think* Journey, a multiplier event with 272 participants. The feedback from these three activities showed that around 80% of the participants evaluated the course material as an effective support to try out and to learn the method of Design Thinking applied in an educational context.

Keywords: Design thinking, research, higher education, innovation, toolkit.

1. Introduction

The world is facing unprecedented social, economic and environmental challenges, driven by accelerating globalisation and a faster rate of technological developments. Based on this continuous transformation, many academic, governmental and private organisations are emphasising the urgency of changing the educational system. Students have to be prepared for jobs that have not yet been created, for technologies, that have not yet been invented, and to solve social problems that have not yet been anticipated. In this context, *The Future of Education and Skills 2030* project (OECD, 2018) points out that students "will need a broad range of skills: cognitive and meta-cognitive skills (e.g. critical thinking, creative thinking, learning to learn and self-regulation); social and emotional skills (e.g. empathy, self-efficacy and collaboration); and practical and physical skills (e.g. using new information and communication technology devices)". Already in 2009, under the EU *Forum University Business Dialogue* (COM, 2009), there was a consensus on the need for comprehensive change to curricula and learning methods and for the inclusion of transversal and transferable skills, so that students can be prepared to be the agents of change. HEI (Higher Education Institution) and VET (Vocational Education Training) institutions need to maintain their efforts to reposition themselves in the emerging learning landscape. They must experiment with new formats and strategies for learning and teaching to be able to offer relevant, effective and high-quality learning experiences in the future (Redecker et al., 2011). Because of its collaborative and creative approach, its cross-disciplinary and human-centredness, Design Thinking is seen as a useful mindset and method to face the challenge of a new learning paradigm.

The European project *D-Think – Design Thinking Applied to Education and Training* has the goal of promoting the application of Design Thinking as an innovation method for rethinking not only learning/teaching methods but also pedagogical approaches, learning spaces and/or the role of educators. In this wider context a Research Report, a Toolkit and an M-learning course for HEI and VET educators was developed; all material is available in open access.

1.1. The Design Thinking Concept

Design has always been a catalyst for innovation. In the last decade, it has rid itself of its function merely in product creation, to widen its activities into the innovation process in general, whether in service, social or educational innovation (see Brown, 2009; Martin, 2009; Tschimmel, 2012; Noweski, 2012). It is now accepted that any kind of business or organisation can benefit from the methods used by designers. In earlier work (Tschimmel, 2012), we affirmed, and still maintain, that Design Thinking (DT) relies on the designer's capacity to consider at the same time: 1. Human needs and new visions of living well; 2. Available material and technical resources; and, 3. The constraints and opportunities of a project. DT is based on the ability to combine empathy for the context of a problem, creativity in generating ideas and solutions, and rationality in matching solutions to the context. Design Thinking is a holistic and user-centred method, based on design cognition and design learning, that enables teams to enact positive change in the world. Today, it is understood as a way of thinking in multi- and interdisciplinary teams, driving transformation and innovation by looking for new perspectives and solutions.

1.2. Design Thinking applied in Higher Education

The need for educational reform has led to much research, which has documented the value of experiential learning, creative problem solving and design thinking, and increased relevance and motivation in learning. Projects such as *Design Thinking for Educators* (Riverdale & IDEO, 2011) or *Thinking & Acting Like a Designer* (Diefenthaler et al., 2017) with their case studies, mindset and toolkit, have already proved that Design Thinking is able to offer research, creativity and learning tools, capable of boosting collective intelligence, novel & adaptive thinking, transdisciplinarity, empathy with an audience, and many other skills employers and organisations seek today. Research studies on behalf of Education and Culture of the European Commission, such as "Future Learning Spaces" (Punie & Ala-Mutka, 2007), "The Future of Learning: New Ways to Learn New Skills for Future Jobs" (Redecker et al., 2011) or "The Future of Education and Skills 2030" (OECD, 2018) show that the Design Thinking methodology can be an important contribution in a new vision-building process for educational systems. The OECD Learning Framework 2030 presents a complex concept, when it calls for "the mobilisation of knowledge, skills, attitudes and values through a process of reflection, anticipation and action, in order to develop the inter-related competencies needed to engage with the world." This challenge requires the construction of a knowledge base for redesigning curricula. A change of curricula is based on an analysis of the ecosystem of many stakeholders: "Students, teachers, school leaders, parents, national and local policy makers, academic experts, unions, and social and business partners have worked as one to develop this project." (OECD, 2018)

Working deployed within this challenge, Design Thinking can help with the exploration and organisation of diverse information; through visualisation, mapping and prototyping tools, and by helping to make sense of and tackle ill-defined problems. Thus, DT can be of great help in re-designing learning environments, structures, processes and contents. A diverse learning ecosystem in which learning adapts to each learner instead of learners trying to adapt to training environments is the new model for education. And Design Thinking is an effective method for finding answers to this challenge, by recreating new learning proposals in a collaborative process.

2. The Background of the D-Think Project

The *D-Think - Design Thinking Applied to Education and Training* project was conceived to answer the above identified specific challenges that the EU and the world are facing nowadays. According Redecker et al. (2011), many of the changes depicted have been foreseen for some time but they have come together now in such a way, that it has become urgent and pressing for policymakers to consider them. The *D-Think* project is a kind of proposition of a fundamental shift in the learning paradigm for the 21st century world. It is also a response to the European Commission's search for personalised, collaborative and informal learning, by offering a Toolkit, the application of which could lead to a holistic changes in HEI or VET institutions, by redesigning curricula, pedagogies, assessment, teacher training, etc. The project also aims to orient educators, through the use of Design Thinking, to find out what kind of knowledge, skills, attitudes and values are needed for today's students, as well as how educational systems can effectively develop them.

This is the background against which between 2014 and 2017, seven institutional partners from six different European countries developed the Research Project *D-Think*, supported by the Erasmus+ Programme of the European Commission. The seven partners are the Portuguese Design College ESAD/CIFAD (project leader and the general coordinator), Advancis Business Services (Portugal), Vaasan Ammattikorkeakoulu VAMK (Finland), ISTUD Business School (Italy), Akademia Humanistyczno-Ekonomiczna Łodzi (Poland), Venture Hub (Spain) and the European Foundation for Management Development (Belgium). The target group for the project includes HEI professors & staff,

VET providers, educators & staff, adult educators, professional trainers & key-actors in DT and Education. The *D-Think* project was designed with the aim of promoting a wider use of Design Thinking as a transversal learning method, by developing and making available an innovative open access digital course supported on mobile learning. The main achievements of the project include the *D-Think Research Report* (Tschimmel, et al., 2015), the *D-Think Toolkit* (Tschimmel et al., 2017) and the m-learning Course on DT applied to Education and Training (available at https://dthink.worldclass.io).

2.1. Objectives

The goal of the *D-Think* project is the promotion of the application of Design Thinking as an innovation method to rethink not only learning/teaching methods but also pedagogical approaches, learning spaces or the role of educators. Focusing on the redesign of education and on the change of educators' mindset, the objective of the project was not to teach educators how to teach Design Thinking to their students, but to apply it themselves to improve the educational system. In this context a training course was developed, through which HEI educators and VET trainers can learn how to apply Design Thinking tools and how to get into its mindset. The main achievements of the project, include the above mentioned Research Report, the Toolkit and the m-learning Course.

2.2. Methodological Approach

The methodological approach of the research process and the development of the *D-Think* course material was Design Thinking itself. By applying the DT model *Evolution 6²* (Mindshake, 2016), the research team was led through the different DT phases, applying several tools of Design Thinking, such as Trend Analysis, Collaborative Mind Maps, Field Observation, Interviews or Rapid Prototyping. The whole research process is described in the *Research Report* (Tschimmel el al., 2015).

Mindshake's Design Thinking Model, *Evolution 6²* (E.6²) was developed between 2012-2015 by Katja Tschimmel, the research leader of the *D-Think* project, as the result of her research studies about the creative processes in design. The model has been applied in product and service development, workshops, coaching sessions, research projects, and methodology lessons. Since 2015 the E.6² model is registered under Creative Commons Attribution 4.0 International License in the version 'by-sa'.

During the research process, other well known Design Thinking models have also been analysed. The analysis and comparison of the models permitted the optimisation of the different tools introduced to the *D-Think* Toolkit and the m-Learning course, contained in the E-phases of the E.6² model.

During the development of the *Research Report,* literature research and data analysis on new teaching methods and pedagogical activities was also carried out, as well as on the application of DT in Education. This research allowed the definition of the theoretical framework of the study, and above all, the construction of the different scenarios to be presented in the *Toolkit.*

3. The D-Think Toolkit

The *D-Think Toolkit* (Tschimmel et al., 2017) is intended to be an active workbook to support the use of Design Thinking as a method of renewing educational approaches and methodologies, to update and learn how to redesign learning experiences, and to promote a mindset which encourages innovation.

The toolkit was conceived as a way of stimulating the application of the DT tools by educators and trainers in different and relevant educational contexts. As a result, the research group conceived three educational contexts with two scenarios in each context. In the first context, "Setting the Learning", one scenario is related to the "Pedagogical Framework", and the other to "Revision of Curricula". The pedagogical framework should include the expectations and the core systemic principles of the institution. In the "Revision of Curricula" scenario, the DT process starts with the understanding of where and how a certain course fits within the educational system and its broader programmes.

The second context of the toolkit, "Conceiving the Learning", is dedicated to two scenarios: "Developing Contents" and "Setting the Assessment". Contents may be varied, including printed and digital materials, and live performances, such as classes, games or events. In the learning contents development, the focus should be on the construction of meaningful learning experiences that simultaneously engage and challenge students and their teachers. One of the main challenges in designing and creating learning experiences is to define what has to be accomplished, and to ensure not only a combination of the content and the instructional methods, but also the assessment. Assessments are a central element in education, which can affect decisions about results, assignments, improvements, instructional needs, curriculum, and, in some cases, even funding and certifications. But the way the assessment system works today is not inspiring students to improve their learning activities. Instead of being focused on quantitative evaluation, qualitative feedback would be better suited to the diversity of the learning ecosystem.

The last two scenarios of the toolkit are related to "Facilitating the Learning", by first "Designing new Learning Spaces", and second by rethinking "The Role of the Educator/Facilitator". When working to deliver innovative learning experiences, educators and organisations need to rethink the way learning spaces are organised. As a consequence of globalisation and new technologies, the requirements for a learning environment have changed considerably. In order to fit the 21st century learning framework, spaces should be sufficiently diverse to accommodate different learning styles. As for the role of the educator, he/she should be more a facilitator than a teacher in the traditional way. The last scenario and the proposed DT tools would help educators to define better the role and the tasks of the educator as a facilitator of learning experiences, providing the intellectual, physical and emotional growth of students.

Each of these six scenarios follows the six E-phases, having between eight and twelve DT tools used for the whole process.

The *D-Think Toolkit* is part of the open access m-Learning course (both are available in six languages), an innovative digital course that was designed with the same structure, but uploaded with videos and exercises that guide and allow the testing of different contexts and scenarios. The contents are available not only online for mobile use, but also for computer screens and tablets, increasing the range of possibilities of use.

4. Validation of the project

Throughout the project, diverse activities of validation of the different results were developed. During the elaboration of the *Research Report* (Tschimmel et al. 2015), several interviews with HEI educators and VET trainers were carried out, which showed that most of them are neither familiar with the emerging educational trends nor with Design Thinking, but that they feel the urgent need of a change in education and training. The final outcome - the Toolkit and the Platform - were validated in three ways: 1. a "Train the Trainer" Course, a training activity for 7 facilitators, to prepare them for the m-learning pilot sessions and future training course exploitation, 2. a Pilot Course with 104 participants, and 3. the a Multiplier Event, which took place in 5 countries.

The assessment was a key part of the methodology of the face to face "Train the Trainer" Course, and it was structured as a three step process: STEP 1 - a first quick questionnaire was submitted before the beginning of the course, to get some general information about participants' profile, familiarity with Design Thinking, individual's expectations and engagement; STEP 2 - a discussion within the group of participants to get qualitative feedback at the end of the course; STEP 3 - a customer satisfaction questionnaire, submitted by participants some weeks after the end of the course. Through the evaluation procedures and analysis it was possible to conclude that the overall satisfaction with the course was good, as confirmed by 85% of the answers; the same percentage also considered that the knowledge acquired is applicable for their professional life. Some final suggestions for improving the "Train the Trainers" course were also offered, which generated a report with an improved programme for future editions of the course.

Additional training activities also took place during the project, namely the M-learning Pilot Course. The pilot training was conducted online in order to test the m-learning course and gather feedback for improving the D-Think Toolkit. In addition to this online pilot session, partners also organised local face-to-face sessions that, allowed the participants to observe, perceive, and identify the dynamics that arose from the face-to-face experience. The pilot session was organised for 104 (online) participants and it engaged HEI professors, professional trainers, and other educators from all the countries of the partnership and other European countries.

Finally, the multiplier event *D-Think Journeys,* which took place in 5 of the partnership countries with in total 272 participants. The *Journeys* were intended to: present the project's main results for stakeholders and potential end users; allow the discussion of other initiatives related to DT applied to education and training; collect support to ensure the continuity of the project. The satisfaction of the participants with the events was assessed through a questionnaire which revealed that the majority of the participants were satisfied or very satisfied with the events. They found Design Thinking, the Toolkit and the course very interesting and useful. The general impression was good and most of the participants believed that Design Thinking may be a powerful tool in planning new curriculum and teaching methods.

5. Conclusions

One of many conclusion of the *D-Think* research project was that Design Thinking is an attitude, a model to structure and focus an innovation process. It can be applied in education and training the same way as it is used in the field of management, or in any other field, wherever one needs the creative development of processes, strategies and programmes.

The positive feedback from the three validation activities showed that around 80 % of the

participants evaluated the course material as an effective support to try out and to learn the method of Design Thinking applied in an educational context. Participants feedback also confirmed that the *D-Think* project provides access to an innovative pedagogical methodology, in line with EU priorities (learner centred learning; innovative pedagogical concepts), and that is able to be used in formal, informal and non-formal educational contexts.

As a final conclusion emerged during the Toolkit and m-Learning Course development, we can definitely affirm that the Design Thinking method presented in the D-Think toolkit and m-Learning Course helps by: fostering a mindset that drives transformation; offering model educational scenarios to follow; allowing the creation of one's own pathways and toolkit; permitting selection and creating solutions for building on experience and pathways; being custom-made, adaptable and flexible; being for all educators interested in redesigning their educational perspectives, strategies and methods

References

Brown, T. (2009). *Change by Design. How Design Thinking transforms Organizations and inspires Innovation.* New York: Harper Collins Publishers.
Business Innovation Factory (2014). *TD4Ed - Teachers Design for Education. Unleashing the Potential of Teachers as Designers.* Report supported by Bill & Melinda Gates Foundation. Retrieved 12/8, 2017 from http://td4ed.businessinnovationfactory.com/td4ed-report.pdf.
COM (2009). *A new partnership for the modernisation of universities: the EU Forum for University-Business Dialogue.* Commission Staff Working Document. Brussels: Commission of the European Communities. Retrieved 6/3, 2018 from https://ec.europa.eu/education/sites/education/files/
university-business-assessment-2009_en.pdf.
Diefenthaler, A., Moorhead, L., Speicher, S., Bear, C., & Cerminaro D. (2017). *Thinking & Acting Like a Designer: How design thinking supports innovation in K-12 education.* Ed. Wise & Ideo. Retrieved 6/3, 2018 from https://www.teachersguild.org.
Martin, R. (2009). *The Design of Business. Why Design Thinking is the next Competitive Advantage.* Boston, Massachusetts: Harvard Business Press.
Mindshake (2016). Design Thinking model Evolution 6^2 and Templates. Available in: http://www.mindshake.pt/design_thinking
Noweski, C., Scheer, A., Buttner, N., Von Thienen, J., Erdmann, J., & Meinel, C. (2012). Towards a Paradigm Shift in Education Practice: Developing Twenty-First Century Skills with Design Thinking. In Plattner, H. & al. (Eds.). *Design Thinking Research – Understanding Innovation.* Retrieved 12/8, 2017 from http://link.springer.com/ chapter/10.1007/978-3-642-31991-4_5.
OECD (2018). *The Future of Education and Skills 2030.* Paris: OECD. Retrieved 16/2, 2018 from http://www.oecd.org/education/2030/oecd-education-2030-position-paper.pdf
Punie, Y. & Ala-Mutka, K. (2007). Future Learning Spaces: new ways of learning and new digital skills to learn. *Digital Kompetanse, Vol 2.* 210-225.
Redecker, C., Leis, M., Leendertse, M., Punie, Y., Gijsbers, G., Kirschner, P., Stoyanov, S., & Hoogveld, B. (2011). *The Future of Learning: Preparing for Change.* Institute for Prospective Technological Studies. Sevilla: European Commission.
Riverdale & Ideo (2012). *Design Thinking for Educators.* 2nd Edition. Retrieved 12/8, 2017 from http://www. designthinkingforeducators.com/toolkit/.
Scheer, A., Noweski, C, & Meinel, C. (2012). Transforming Constructivist Learning into Action: Design Thinking in Education. In *Design and Technology Education: An International Journal V. 17, No 3.* 8-19. Retrieved 12/8, 2017 from http://ergov/?q=%22Design+thinking+in+Education%22&id= EJ996067.
Tschimmel, K. (2012). Design Thinking as an effective toolkit for innovation. In *Proceedings of the XXIII ISPIM Conference: Action for Innovation: Innovating from Experience*. Barcelona.
Tschimmel, K., Santos, J. Loyens, D., Jacinto, A. Monteiro, R., & Valença, M. (2015). *Research Report D-Think. Design Thinking Applied to Education and Training.* Erasmus+, KA2 Strategic Partnership. Matosinhos: Ed. ESAD.
Tschimmel, K., Loyens, D., Soares, J., Oraviita, T., Jacinto, A., Barroca, A., Marinova, B., Santos, J., Carenzo, M., & Manzini, S. (2017). *D-Think Toolkit. Design Thinking Applied to Education and Training*. Erasmus+, KA2 Strategic Partnership. Matosinhos: Ed. ESAD.

THE EHEALTH EXPERIENCE WITH POST-SECONDARY STUDENTS MAJORING IN HEALTHCARE DISCIPLINES ON A MOOC: OPPORTUNITIES AND CHALLENGES OF SELF-DIRECTED E-LEARNING FOR ESL LEARNERS

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Abstract

Having experienced the interactive components selected from an online MOOC course named "eHealth: More than just an electronic record" offered by the University of Sydney on the Coursera platform, post-secondary students majoring in healthcare disciplines in Hong Kong have been introduced to the concept of eHealth and its working language in Australia.

This paper would decipher the pedagogical implications brought forth by the juxtaposition of cultural divide and differentiated language abilities in learning the eHealth concept through studying the discussion threads within a MOOC (Massive Open Online Course). Also, it would outline the benefits and challenges faced by healthcare-majored ESL learners in the course of self-directed e-learning. The narrative inquiry approach would be adopted in soliciting students' first-hand responses in forms of focus group meetings. Primary data would also be collected through questionnaires and third-party observations.

It was concluded that the students concerned were able to direct their own e-learning, master the skills in writing commentaries on mobile apps about health informatics and critically evaluate each other's work online. The challenges of online learning faced by ESL learners will also be discussed.

Keywords: MOOCs, eHealth, self-directed e-learning, health informatics, discussion threads.

ARE ENTREPRENEURSHIP AND DIGITAL COMPETENCIES FALSE FRIENDS? A DESIGN THINKING CASE OF THE INTENSE E-TOOL

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Abstract

This paper roadmaps the creation of an e-TOOL for SMEs willing to internationalize, done within a three-year Erasmus+ project: International Entrepreneurship Skills Europe (INTENSE).

The e-TOOL is part of a hybrid course: it is to be linked to face-to-face, case-based entrepreneurship classes at the universities in the Netherlands, Croatia, Germany, Finland and Belgium.

Its specific challenges are to share tacit knowledge on doing business in other countries, to collect links to useful information on doing business in other countries and to share existing teaching material and case studies of SMEs that have internationalized.

To understand these challenges thoroughly the design thinking approach developed by IDEO and taught at the d.School of Stanford University was adopted. Empathy with the community's ways of thinking was gained in the INTENSE staff training week. Based on this experience needs and insights on a deeper level were formulated. In the ideation phase a draft concept based on Puentedura's model of technology-enhanced learning, the SAMR-model, was presented. It consisted of several ways of engaging and tapping into the international entrepreneur's wisdom linked to Puentedura's four steps in digitalizing courses: Substitution, Augmentation, Modification, Augmentation. Thus, the point of view was highlighted that to draw in entrepreneurs into the INTENSE hybrid course, the e-TOOL had to be digital and student-centered. Feedback was gathered during the project meeting in Utrecht. New insights emerged: the clash between design thinking and project management; the confusion between content- and competence driven education; the questions about lecturers and practitioners as knowledge resources. And of course, there were feasibility issues. Incorporating these concerns, a prototype was created in WordPress to be embedded in the final website and design cheat sheets were shared. The prototype was tested during events for academics and entrepreneurs in the partner countries.

Finally, the paper discusses the takeaway of this process linking the final INTENSE e-tool to the SAMR-model and the European Frameworks both for digital competencies and Entrepreneurship and Sense of Initiative competencies. As the European commission stresses that these frameworks should be used as languages, the linguistic concept of 'false friends' is selected as a metaphor for the final reflection. A false friend is a word that is often confused with another word in another language with a different meaning because it looks or sounds the same, according to the Cambridge Dictionary.

Keywords: Design Thinking, e-Tool, Digital Competencies, Entrepreneurship Competencies, SAMR.

WORKING TOGETHER ACROSS EDUCATIONAL LEVELS TO INCREASE STUDENTS' MOTIVATION

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Abstract

An analysis of the Degree in Primary Education course syllabus revealed that some skills had to be complemented in order to ensure the Education students' career success. The present study is based on "testing skills", one of the shortfalls identified as needing deeper training throughout the 4-year degree. There is no denying that the Education students have been testees for years, but they lack the tester´s perspective (how to create, administer and mark tests). From the standpoint that assessment is a crucial part of teaching, students who will work as primary school teachers must, undoubtedly, get input and practice in testing.

The study was carried out at Florida Universitaria (private institution affiliated to the University of Valencia). This Higher Education institution offers undergraduate and postgraduate programmes, as well as, vocational training courses. In this scenario, a project across two different educational levels (vocational training and university degrees) seemed a solution to complete the Primary Education undergraduates' testing skills. The project was conducted by two English teachers and focused on language testing. A group of 24 third-year Primary Education Degree students (major in English teaching) were asked to participate in the assessment of the English subject in a Finance vocational training course (46 students). This project was approached from a peer testing perspective, following the surrogate teaching method. The Education students designed an A2 English test adapted to the contents studied by the Finance students in their English class.

Apart from providing training in second language testing, this project became an opportunity to increase participants' motivation and achieve these specific objectives, relevant for both educational levels: to enhance students' responsibility when dealing with peers, to enable students' cooperation across different educational levels, to foster the use of computing tools in education, and to improve communication skills in English.

After researching on testing, the Education students opted for the communicative testing approach. Once the test was designed, pretested and checked by the lecturers in charge, it was administered online to the Finance students during class time under the teacher's supervision. The completed tests were e-mailed back to the Education students, who marked them and sent the results, together with feedback, to the testees. These marks accounted for a percentage of the Finance students´ English assessment.

Participants' reported opinions reinforced that teaching and learning in real settings were fundamental to find the experience highly rewarding and motivating.

Keywords: Project, higher education, motivation, peer testing.

1. Introduction

After years teaching at the Degree in Primary Education, experience confirms that, despite the effort and resources invested by universities, students still lack some essential teaching skills when they graduate. At our institution, Florida Universitaria (affiliated to the University of Valencia), in order to identify the topics that the course programme should incorporate to ensure Education students' career success, a thorough analysis of the Primary Education Degree syllabus was carried out. Results revealed that one of the issues to be addressed throughout the course was "testing skills". The Education students have been testees for years, but they will graduate without having the tester´s perspective (how to create, administer and mark tests). Undoubtedly, teaching and testing are closely interrelated up to the point that it is almost impossible to work in one of these areas without being constantly concerned with the other. As Madsen (1983:3) claims, "Testing is an important part of every teaching and learning experience". On

the basis of this perspective, we were compelled to provide the Education undergraduates with the testers' experience before they graduate.

In this scenario, a project across two different educational levels in higher education based on peer assessment, appeared to be the best solution to complete the Education students' testing skills training and its practical application. Since finding primary school students to be assessed by our Education students was beyond our reach, we took advantage of Florida Universitaria academic offer to implement the project. At our institution there are advanced vocational training courses apart from undergraduate and postgraduate programmes. With this academic choice, and the fact that the two teachers conducting the study were English lecturers, the project was focused specifically on second language testing. The participants were a group of third-year Primary Education students (doing a major in English teaching) acting as testers and a group of an Advanced Vocational Training Course in Finance (with an English subject in their syllabus) as testees. The Finance students had a lower English level compared to that of the Education students, which gave us the perfect setting for peer assessment.

A group of 24 third-year Primary Education Degree students were asked to participate in the Finance students´ assessment of their English subject (46 vocational training students were tested). The Education students designed a test adapted to the English contents learned by the Finance students with their English teacher. Then, the test was administered online and marked by the Education students, who sent feedback together with the test results to the Finance students. The test results accounted for a percentage of the Finance students English course mark.

Although the general objective of the project was to provide students with a second language peer testing experience, it also presented an opportunity to increase participants' motivation for their English class.

Additionally, four specific objectives, relevant for both educational levels (university and vocational training) were targeted with the project here presented: to enhance students' responsibility when dealing with peers, to enable students' cooperation across different educational levels, to foster the use of computing tools in education, and to improve communication skills in English.

In the following sections, first of all the relationship between motivation and peer assessment will be reviewed. Then, the project will be described in detail and appraised. Finally, test results and students' satisfaction degree will be analyzed in depth.

2. Motivation and peer assessment

According to Dörnyei and Ushioda (2011:4) "motivation is responsible for why people decide to do something, how long they are willing to sustain the activity, how hard they are going to pursue it", supporting this approach, the characteristics of the project presented in this paper, together with our students' particular traits, could clearly enhance the participants' motivation for English learning. One of the reasons that made us consider the project as highly motivating is that it was based on three of the multiple motivational factors scholars like Williams and Williams (2011) detail, the first one is making the content "relevant to real life" which is particularly important to students' careers. In fact, we are linking "motivation" with "transfer", following the terminology used by Ngeow (1998). According to this researcher, students feel motivated because they understand that the learning process is relevant and transferable to other situations, in our project the Education students experience testing and can see how it can be transferred to primary students' classes.

The second motivational factor widely supported is "teamwork". It is accepted that it can contribute to learning (Williams & Williams, 2011), but we should be aware of the influence among team members, which is not always positive, as Dörney (2001) explains, the motivation of the task participants is not independent of each other, when a student works with highly motivated or unmotivated partners, this affects the learner's own attitude towards the task. Despite the many issues that can have a negative impact on collaborative work, researchers confirm that there are more advantages than drawbacks. As examples we can take studies carried out by Bianchetti et al. (2000), or Alberola & Gil (2009) based on on-line collaborative activities; they corroborated that students' motivation and participation increased when working in teams.

The next motivational factor to be highlighted is the "use of technology and information from the internet". Both have been considered highly motivating since the late nineties; things are different now and some of the novelty value of ICT has been lost, but we still find they can create a meaningful and motivating context to frame the collaborative project-based approach. As Warschauer (2000) states, the key to successful technology in language teaching lies in the capacity teachers have to plan, design and implement such activities.

Furthermore, peer teaching can also contribute to students' learning, motivation and empowerment (Colvin, 2007), therefore the third-year Education students were asked to take some of the teaching and testing responsibilities for the Finance students applying a surrogate teaching approach. Apart from its motivational impact, our project was geared towards peer teaching to benefit from other advantages highlighted by some scholars like Briggs (2013). This author states that, peer teaching enables direct interaction between students that promotes active learning, peer teachers also reinforce their own learning by instructing others; besides, students feel more comfortable and open when interacting with a peer. Furthermore, peers and students share a similar discourse, allowing for greater understanding.

In order to achieve successful peer assessment, as part of peer teaching, the first thing to be done is to agree with teacher and students the criteria by which the work is going to be judged (Falchikow, 2001). This author emphasizes that equally important is giving peer feedback after testing, since students engage in reflective criticism of the performance of other students using previously identified criteria. Falchikow (2001) also stresses that to communicate critical feedback to their peers, students need to develop diplomatic and constructive ways of doing it. There are also some drawbacks in peer testing, Falchikow (2001) points out that sometimes students are reluctant to assess their fellow students, and consequently, peer assessment can be slightly more generous than teacher's assessment. As Blumenfeld et al. (1996:37) put it "Peer learning can be a powerful tool. However, it is not a guaranteed solution to educational problems".

3. Project description

To meet the project objectives and to obtain the desired outcome, the process required efficient collaborative work among the different stakeholders (teachers and students). On the one hand, the two lecturers conducting the project worked together to coordinate the process and to set objectives, tasks, deadlines, guidelines and assessment. On the other hand, the students collaborated with their own classmates and with the participants from the other academic level.

The Primary Education students were trained on the language testing essentials. After that, in pairs these learners were assigned to research on testing theories to back up the test they had to design. Finally, all the pairs decided to create their test following the "communicative" language testing approach based on the following characteristics: it should aim at measuring how language is used in communication; consequently, as Paltridge (1992:246) claims, most testers incorporate tasks which approximate as closely as possible to those faced by the students in real life. Second, the test should be contextualised, focused on language use but in the contexts and for the purposes relevant to the learner (Porter,1991). Third, communicative tests must respond to learners' needs. And finally, in communicative exams qualitative assessment is preferred to quantitative modes.

Meanwhile, with their English teacher, the Finance students in their A2 English course were working in groups on some grammar points and business related vocabulary based on topics such as office orientation, office routines, using voicemails and the intranet, handling mails and using a courier service.

Once the Education students had gained theoretical knowledge about testing, a practical application was necessary and at this stage the collaboration between students in both educational levels (vocational training in Finance and degree in Primary Education) started.

The Education students worked in pairs, they were asked to design a test with these core characteristics: it needed to have one 5-item activity per content point using business specific vocabulary, the activities had to be original and not copied from any source. On top of this, each type of activity had to be used only once in order to avoid the method effect. Together with the test, students had to create the marking method.

Thereafter, with the aim of checking the Finance students' level of content acquisition in detail, the 24 Education students designed one test per pair, on the whole 12 tests. Each of the 46 Finance students participating had to complete individually two different tests, to obtain more reliable results according to the teachers conducting the experience. The lecturers were also in charge of establishing which testers had to work with which testees.

To foster the use of computing tools in education, the tests were administered online (via e-mail) during class time and with the class teacher monitoring the appropriate performance. When tests were completed, the Finance students e-mailed them back to the Education students, who marked them and sent results with feedback to the Finance students and their teacher. The average result obtained considering the two tests done by each Finance student accounted for 15% of their overall English course semester mark.

When the testing process was finished, the Education students had to write a report with the description of the methodology, test, results, as well as conclusions and recommendations. Once concluded the whole process, both groups completed a satisfaction questionnaire about the experience. It was slightly different for each group due to the fact that it was focused on the tasks carried out. All the process had been online, thus it was decided to hold a face to face meeting for students to meet, share opinions and evaluate the experience.

4. Findings

This section is divided into two parts regarding the two types of findings obtained; on the one hand the results that the Finance students got in the English test. On the other, the satisfaction rates given by participants in the questionnaires that they completed.

4.1. Exam results

Exam results were satisfactory because 82.6% of the Finance students passed the two English tests that they had completed. Furthermore, some of the students who had failed one of the exams obtained a pass when the average mark was calculated. Therefore, it is fair to say that 91.3% of the students got a positive mark in the project. It has to be remarked that the validity of the results was guaranteed by the teachers' checking the tests and monitoring the whole process.

4.2. Satisfaction questionnaires

Students' self-reported degree of satisfaction was essential in order to evaluate the project. Questionnaires and open comments forms were the tools chosen. The Education students' questionnaire had 12 items whereas that of the Finance students had 11. The answers were rated from 1 to 5, being 1 strongly disagree and 5 strongly agree.

Both questionnaires were divided into 3 sections. In the first one, students were asked about the possibility of using the project for university research and presenting it in an international conference. As expected, almost 90% of the Education students found it interesting, and approximately two-thirds of the Finance participants thought the same way. This result strengthened our conviction that the Education students are more aware of the importance and benefits of participating in conferences than the Finance students.

The second section dealt with students' motivation for the assignments and the whole process. Focusing now only on the Education students, 88.8% found designing the test, testing peers, and giving feedback highly motivating, whereas they did not enjoy marking tests so much (77.6% considered it motivating).

As regards motivation for the process, figures were similar 88.8% graded participating in real assessment and online testing 4 or 5 (highly motivating). However, 77.6% gave 4 or 5 to the use of computer tools as motivational factor.

With regard to the Finance students' opinions about motivation for the project, results were slightly lower. Answering the test questions and being assessed by peers were valued as motivating by 73.7% and 62.4% respectively because some of them did not completely rely on peer assessment. Nevertheless, participating in a real learning experience with university students was rated 4 or 5 by 84.2%. However, using computing tools for testing and communication went down to 79%, some students argued that doing tests on paper could make things easier.

Section 3 dealt with students' satisfaction with the project. In response to the questions about the test (design, administration, results and feedback), the most remarkable result to emerge from the data was that 100% of the Education students were highly satisfied, while 70.5% of the Finance students gave 4 or 5.

A substantial decrease to 55.5% was found in the Education students' satisfaction with communication with peers. This number was slightly lower than the value expected. On the contrary, the Finance students' opinions reached 89.5%. The reason for these rather contradictory results is not entirely clear, but comments lead to the fact that the Education students expected a higher degree of communication which rewarded the hard work done before the actual testing.

The last question of the questionnaire was related to the satisfaction with the project coordination: 100% of the Education students strongly agreed with it, while the figure of the Finance students was 83.5%.

In relation to the comments added in the forms provided, all the Education students agreed on the positive impact of the experience on their professional training, since it was the first time they had dealt with assessment from the teacher's perspective. They particularly appreciated the experience as part of

innovative meaningful learning. However, they suggested to know more about the testees actual English level before designing the exam.

From the testees' perspective, although they were satisfied with the experience, they perceived different complexity in the tests, and they complained about the absence of the testers when the test was administered because it made the comprehension of some exercises more difficult. Additionally, testers and testees agreed on the insufficiency communication with peers.

5. Conclusions

In our view, the results obtained in the test and satisfaction questionnaires proved the validity of our project. These results have reinforced our confidence in the effectiveness of a peer assessment project across educational levels. All in all, it has been academically beneficial for all the participants, apart from providing Primary Education students with the tester's perspective.

As regards motivation, students' self reported information confirms that the motivational factors applied to the experience (relevant to real life, teamwork, use of ITC, learning with peers) had an impact on the participants' attitudes throughout the project development, however it can be confirmed that the use of ICT does not have the motivaltional importance it used to have.

In relation to the specific objectives set at the beginning of the testing process, it can be confirmed they have been achieved i.e., students showed a high degree of commitment when dealing with peers, they collaborated actively with learners in a different educational level, they used ICT to communicate and their writing English skills improved, in the case of Education students, they even started to command business related vocabulary.

Nevertheless, as evidence shows, there are several functional problems to overcome. We are currently in the process of improving the project for the next academic year taking into consideration the students' suggestions as well as our own perceptions.

References

Alberola, P., & Gil, E. (2009). ICT-SUSTOUR and MARKETOUR: Two second language acquisition projects through a virtual learning environment. *Computers & Education, 52* (3), 581-587.
Bianchetti, P., Bocconi, S., & Sarti, L. (2000). A methodology for joint design, co-operation and decision-making for on-line collaborative learning. *Interactive Educational Multimedia*, *2*: 1-10. Retrieved May 20, 2010, from http://www.ub.es/multimedia/iem/down/c1/Collaborative_Learning.pdf.
Blumenfeld, P.C., Marx, R.W., Soloway, E., & Krajcik J. (1996). Learning with Peers: From Small Group Cooperation to Collaborative Communities. *Educational Researcher*, *25*(8), 37-40.
Colvin, J.W. (2007). Peer tutoring and social dynamics in higher education. *15*(2), 165-181.
Dörney, Z. (2001). New themes and approaches in second language motivation research. *Annual Review of Applied Linguistics, 21,* 43-59.
Dörnyei, Z., & Ushioda, E. (2011). *Exploring motivation changing perspectives in teaching and researching: Motivation*. Harlow: Pearson Education Limited.
Falchikow, N. (2001). *Learning together: Peer tutoring in higher education*. London and New York: Rouletge Falmer.
Madsen, H. (1983). *Techniques in testing.* Hong Kong: Oxford University Press.
Ngeow, K. (1998). Motivation and Transfer in Language Learning. ERIC Digest. Retrieved June 13, 2005, from http://www.ed.gov/databases/ERIC_Digests/ed427318.html.
Paltridge, B. (1992). EAP Placement Testing: An Integrated Approach. *English for Specific Purposes, 11,* 243-268.
Porter, D. (1991). Affective factors in language testing. In Alderson, J.C., & B. North (Eds.), *Language Testing in the 1990s: The communicative legacy* (32-40). London: Modern English Publications and The British Council.
Warschauer, M. (2000). The death of cyberspace and the rebirth of CALL. *English Teachers' Journal, 53*, 61-66.
Williams, K., & Williams, C. (2011). Five key ingredients for improving student motivation. *Research in higher education,* 104-122. Retrieved February 12, 2015, from http://scholarworks.csustan.edu/handle/011235813/645

A TWIST IN THE TRADITIONAL FIRST YEAR CHEMISTRY LECTURE: ADOPTING ACADEMIC SUPPORT PRINCIPLES

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Abstract

This paper focuses on Chemistry students' experiences of the active learning spaces created during first year chemistry lectures at a university in South Africa. Further this paper aims to reveal to what extent we can translate what is known about effective academic support to a large lecture setting. Data was collected over a period of three years and 6 university semesters. Semi-structured student evaluations of the teaching, involving more than 500 student responses, identified the interactive nature of the lectures as the most popular feature of the Chemistry lecture. This was followed by a focus group interview each semester with students who volunteered their time to further clarify their experiences of the first year chemistry course.
Data was analysed using a mixed methodology. Several themes emerged with respect to students' experiences of the chemistry lecture learning spaces. It was established that students valued the discursive learning spaces created through discussion, problem solving and opportunities for reflection as well as meaning making. Students commented that they felt motivated to learn and became aware of what concepts they did not understand.

Keywords: First year chemistry, academic support.

1. Introduction

An effective teaching experience provides a space for ideas, encourages the creation of different points of view, articulating them, accounting for them, warranting them with evidence and argumentation, growing them in conjunction with other ideas, watching them take shape beyond what was first even imagined (Tananis, 2000). A descriptive exploratory study undertaken by Albertyn (2014) using quantitative data derived from a questionnaire. Where undergraduate students were asked to provide information related to their experiences of various aspects in the large classrooms they attend, such as physical environmental, teaching in the class, methods/

activities, learning and assessment. The results indicated that the students' level of academic independence determined how well they coped in a large class and the competence and enthusiasm of the lecturer influenced whether they attended these classes regularly. It was recommended that teaching and learning methods that could develop students' ability for independent learning be gradually introduced in large classes.

The majority of students today do not come to university with the motivation to assume responsibility for their own learning and must therefore be provided with experiences that increase motivation for strategic learning (McGuire, 2006). Active engaged learning is what we would like students to be doing with the taught material: thinking about and engaging with the content, rather than mindlessly copying slides or thinking about something else altogether.

It is specifically for these reasons that the academic support principles of Supplemental Instruction which involve active learning where adopted in the first year chemistry class at the university in South Africa. SI principles involve collaborative learning techniques, variation in the methods of instruction, active learning techniques and development of learning skills. These SI principles were achieved by making use of questioning techniques, peer and group discussion, problem solving and reflection of concepts discussed which formed the basis of the Chemistry lecture. Supplemental Instruction (SI) is an academic support model developed by Dr. Deanna Martin at the University of Missouri–Kansas City (UMKC) in 1973 that uses peer-assisted study sessions to improve student retention and success within targeted historically difficult courses.

Chemistry in particular comprises four components —the processes used to obtain (discover or create) chemical knowledge; the general concepts and specific ideas encouraged a lecture style delivery of content knowledge. This style of content knowledge delivery did not cater for the different types of

learning styles of the diverse student body of the first year chemistry class at the South African university. The focus on a traditional lecture which involved a passive learning style with minimal interaction between lecturer and students seemed to dominate most lectures. This was partially due to large class sizes and in addition lecture venues favoured the typical lecture style.

Cheng and Gilbert (2009) suggest that, successful learning of chemistry should involve the construction of mental associations among the macroscopic, submicroscopic and symbolic levels of representation of chemical phenomena using different modes of representation. At the macro level, chemical reactions are considered as a process by which some substances disappear and new substances appear while at a submicro level, chemical reactions are considered as a process by which particles are re-ordered. Hence the teaching and learning of chemistry in itelf has many challenges.

Earlier research highlights that student engagement with the lecturer is of crucial importance to ensure the academic success of students (Biggs 1999; Carbone & Greenberg 1998). The increase of class size often results in limited exchanges occurring between students and lecturers with the consequence that students remain anonymous and become passive (Kyne 2010). Without appropriate engagement with lecturers, students often experience difficulty when make meaning of the subject field that they have not been previously exposed to (Kuh, Kinzie, Shuh & Whitt 2010; Wolf-Wendel et al 2009). The large class of students therefore has implications for teaching and learning related to student and lecturer interaction, student learning and responsibility for learning as well as teaching and feedback.

2. Methods

The data for this study was derived from semi- structured student evaluations for first year General Chemistry course for both first and second semester from 2012 to 2016. This was followed by a focus group interview each semester with students who volunteered their time to further clarify their experiences of the first year chemistry course. The semi structured evaluation sheets were analysed each semester through thematic analysis. The focus group interview data were audio recorded and transcribed. An average of eight students volunteered to participate in the focus group interviews each semester. As per university ethical clearance policy participants had the opportunity to read transcripts from focus group interviews to ensure that their views were adequately represented.

3. Discussion and Results

Data from semi-structured student evaluations and focus group interviews from 2012 to 2016 were analysed into the following broad themes:

3.1. Improvement in conceptual understanding

Chemistry is regarded historically as a 'high risk' course (Vorozhbit, 2012). According to Jacobs and Stone (2008), these courses are often large classes with little opportunity for student interaction with the lecturer or with other students; also focus on complex, cognitively challenging material and demand a great deal of higher-level critical thinking. Hence SI principles such as peer and group discussion, variation in the methods of instruction, active learning techniques and development of learning skills where introduced in the first year lecture. The graph below indicates students' responses to the question, what was your experience of the SI influenced chemistry lectures?

Figure 1. Formal Lectures – Improved understanding of chemistry. Concepts.
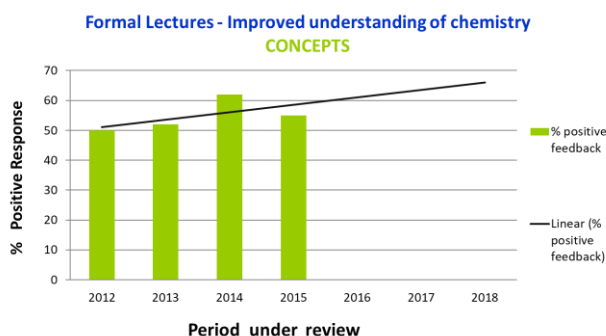
Figure one displays an increase in positive responses with respect to students' experiences of the interactive learning spaces created during the first year chemistry lectures. From 2012 to 2016 there is a linear positive feedback however, in 2015 there was a slight drop in positive responses as much of the

second semester was plagued with student protest action due to the 'Fees must fall campaign'. This situation resulted in many catch up programmes and left students feeling overwhelmed.

3.2 Improved understanding in language of Chemistry

These responses were derived from the question, what was the effect of introducing peer discussions and class discussions into the chemistry lecture?

Figure 2. Formal Lectures – Improved understanding of chemistry. Language.
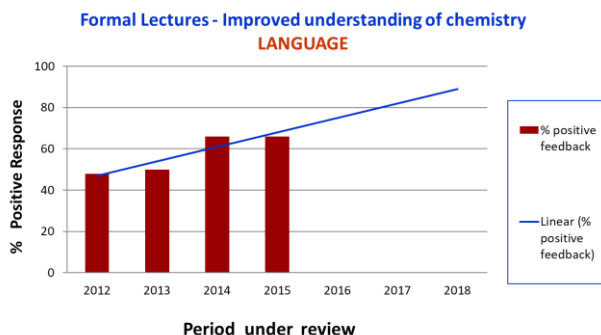
It is evident from the graph that there was an increase in students' positive responses over the five year period. In 2012 and 2013, only 43% of the first year students felt that introducing peer discussions and class discussions during problem solving exercises had any significant effect on their learning of chemistry concepts. In 2014 and 2015 these values increased to 64%. This implies that there was some shift in students thinking over this period of time. The shift in student thinking can be attributed to the change in the schooling system in South Africa during this period from Outcomes Based Education (OBE) to Curriculum Assessment Policy Statements (CAPS) in 2012. OBE focused on learning outcomes whereas CAPS is based on skills development through content. According to Adu and Ngibe (2014), continuous change in curriculum affects the lives, relationships and working patterns of teachers, and the educational experiences of the learners. Hence, it can be assumed that students did not value peer discussions and class discussions which involved students taking responsibility for their learning by engaging critically with content covered during the initial changes in education policy in South African schools. Further, this type of collaborative learning was probably new to their learning style and uncommon in most of their other courses at university.

3.3 Use of different teaching Resources improved Chemistry learning

Students were asked to comment on the effect of adopting different teaching resources during Chemistry lectures. Figure 3 represents responses received from students with respect to their experiences of the different teaching resources.

Figure 3. Formal Lectures – Improved use of Different Teaching. Resources.
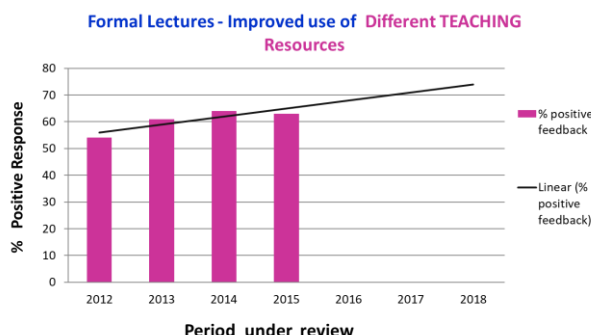
In an attempt to cater for the diverse learning styles of the first year chemistry students a variety of teaching resources were used for example, PowerPoint presentations, online assessments such as mastering chemistry, you-tube videos and visual aids such as modelling kits for molecular geometry. It is evident that with technological advancement students acknowledged that the use of different teaching resources contributed positively to their understanding of chemistry concepts. In addition, Ivic (2016) has suggested that students' skills development, critical thinking, problem solving and preparation for lifelong learning cannot be adequately developed with traditional teaching methods.

3.4 Classroom discussion improved rapport with Lecturers

When first year chemistry students at the South African university under study were asked to comment on the approachability of their lecturer and their opinion of the lecturers' willingness to show empathy and support towards their needs, the following responses were received.

Figure 4. Formal Lectures – Improved Rapport with 1ˢᵗ year Lecturer.
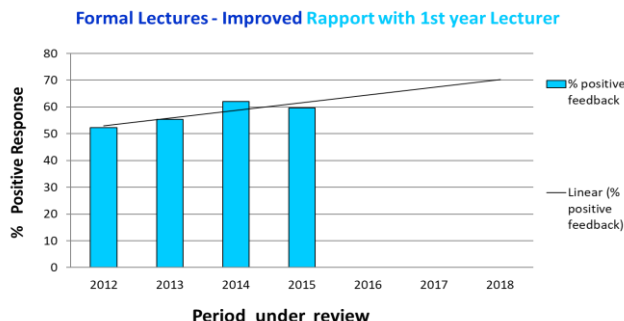
The data received (Figure 4) shows a positive trajectory with respect to lecturers' rapport with first year chemistry students. It is evident that over the years there has been an increase in positive responses suggesting that the influence of SI principles has had a positive impact on lecturers teaching styles creating more conducive learning spaces that encourage participation by all students, render academic support and compassion in creating platforms for all students to succeed.

3.5 Focus group Interview Data

Focus group interviews were conducted with first chemistry students who volunteered to part take in the interview process during each university semester. The student representative in most instances was one of the participants of the focus group interview. Student representatives are elected for each module at the university. These individuals represent the voice of students within the respective modules. Students used the focus group interviews as an opportunity to further clarify their initial lecture evaluation answers and in addition had a platform to express their experiences of the first year chemistry lecture. Some of the responses received with respect to the question 'what are some of the approaches used during the semester that encouraged learning of chemistry concepts?' are shown below:

• "We get to work through exam type questions in class."
• "We are encouraged to ask questions in class if we do not understand."
• "The lecturers never include answers to problems on her lecture slides … we had to come to class and work on them together."
• "Lecturers use different teaching techniques such as group discussion, problem solving and power point presentations. We get to watch YouTube videos and reflect on the muddiest point of the lecture."
• "I especially liked the lecture on Chemical bonding geometries where we worked with modeling kits … I understood the 3D structures so much better."

With respect to students experiences of the interactive teaching and learning style adopted in the first year chemistry class it is evident that students valued learning through active engagement, reflection, the use of different teaching and learning techniques as well as the opportunity to take responsibility for the learning which is evident in the following statement '…we had to come to class and work on them together."

In order to establish any significant overall effect of this approach to teaching and learning one can examine table 1 that follows. Although it is noted that there could be several contributing factors to the general increase in the overall pass rate of the first year chemistry modules from 2012 to 2016, the most significant change over the years has been the move from a traditional lecture style of teaching to a more interactive teaching style.

As already mentioned the general increase in students overall pass rates can be attributed to other contributing factors which is evident in 2016 pass rates. There was a decrease in the overall pass rate in both first year chemistry modules due to the 'fees must fall' student protest action which negatively affected most South African universities in 2016. This was due to many lost months of academic tuition.

Table 1. Overall Pass Rates for the first year Chemistry Modules

Course	Year	Overall pass rate
CHEM 1 semester one	2016	85
	2015	89
	2014	87
	2013	82
	2012	74
CHEM 1 semester two	2016	88
	2015	96
	2014	79.6
	2013	75
	2012	73.5

4. Conclusions

It can therefore be concluded that SI principles positively impacts on chemistry learning skills development amongst first year students.

Students have expressed that they get to learn in a way that develops their critical thinking skills. It is assumed that this would lead to more self-regulated learning amongst the first year chemistry students. Further, students have expressed that they are motivated to learn through use of different teaching and learning techniques.

Reflective practice which is encouraged during discussion sessions is believed to allow students to realise which concepts they don't actually understand.

Lastly it was suggested that class and peer discussions strengthen students' chemistry communication skills.

References

Adu, E.O & Ngibe, N.C.P. (2014). Continuous Change in Curriculum: South African teachers' Perceptions. *Mediterranean Journal of Social Sciences MCSER Publishing, Rome-Italy.* Vol 5(23) :983-989.

Biggs, J. (1999). What the student does: Teaching for enhanced learning. *Higher Education Research & Development,* 18(1): 57--75.

Carbone, E., & Greenberg, J. (1998). Teaching large classes: Unpacking the problem and responding creatively. In *To improve the academy*: *Resources for faculty, instructional and organizational development,* ed. M. Kaplan, 311-316. Stillwater, OK: New Forums Press and Professional and Organisational Development Network in Higher Education.

Cheng M. & Gilbert J. K., (2009), in *Multiple Representations in Chemical Education*, eds. Gilbert J. K. and Treagust D. F., Berlin / Heidelberg: Springer, 191-208.

Ivic, S. (2016). Frequency of Applying Different Teaching Strategies and Social Teaching Methods in Primary School**s.** *Journal of Education and Practice.* Vol 7(33), 66-71.

Kuh, G., Kinzie, J., Shuh, J.H., & Whitt, E.J. (2010). Student success in college: Creating conditions that matter. San Francisco, CA: Jossey Bass. Mihans, R., Long, D., & Felton, P. (2008). Power and expertise: Student–faculty collaboration in course design and the scholarship of teaching and learning. *International Journal for the Scholarship of Teaching and Learning,* 2(2): 1--9.

Machika, P; Troskie-de Bruin, C; Albertyn, R M. (2014) The Student's Experience of Attending Large Classes in a South African Higher Education Context. *Mediterranean Journal of Social Sciences MCSER Publishing, Rome-Italy.* Vol 5(16) :375-380. doi: 10.5901/mjss.2014.v5n16p375.

Mulryan-Kyne, C. (2010). Teaching large classes at college and university level: Challenges and opportunities. *Teaching in Higher Education*,15(2): 175--185.

McGuire SY 2006. The impact of Supplemental Instruction on teaching students *how* to learn. *New Directions for Teaching and Learning,* 106:3-10. doi: 10.1002/tl.228

Stone, M. E., & Jacobs, G. (Eds.). (2008). *Supplemental instruction: Improving first-year student success in high-risk courses* (Monograph No. 7, 3rd ed.). Columbia, SC: University of South Carolina, National Resource Center for The First-Year Experience and Students in Transition.

Vorozhbit, M P, (2012)"Effect of Supplemental Instruction on student success". *Graduate Theses and Dissertations*. 12606. http://lib.dr.iastate.edu/etd/12606 retrieved on 20 May 2018.

Wolf-Wendel, L., Ward, K., & Kinzie, J. (2009). A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success. *Journal of College Student Development*, 50(4): 407--428.

SERVICE LEARNING EXPERIENCE AND THE PROFESSIONAL AND PERSONAL DEVELOPMENT OF SINGAPORE STUDENT TEACHERS

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Abstract

Service-learning (SL) is an innovative pedagogy where students' learning goes beyond the classroom. In the National Institute of Education (NIE), the main teacher training institute in Singapore, the Group Endeavours in Service-Learning (GESL) is an experiential learning opportunity for all NIE student teachers in which they complete small group projects in collaboration with the local community to address local needs. It is hoped that through GESL, participants' communication and collaboration skills, management and leadership skills will be enhanced. It is also hoped that GESL will help to develop their social and emotional competencies. However, there has been few research studies on this. Hence the purpose of this study is to explore how GESL contributes to the personal and professional development of student teachers in NIE.

Ninety-four student teachers from 11 GESL groups were randomly selected to attend a 60 to 90-minute focus group interview. Each interview comprised of 8 to 10 participants. The data interview were subsequently transcribed and a coding manual was created to identify social-emotional competencies and skills learnt or enhanced during their GESL project. The Interpretative Phenomenological Analysis was then used to analyse the data.

Overall, there seemed to be a greater level of self and social awareness. Participants reported getting to know themselves better, in terms of their strengths and weaknesses and how they can contribute to the project. They are also made more aware of communities and organisations that need help in Singapore. There is also enhancement of collaboration, communication and people-management skills. Specifically, many participants reported that GESL had enhanced their ability to work with student teachers from different subject areas and backgrounds. They learnt to manage working relationships with one another by building rapport and through effective communication.

These findings suggest that GESL contributed to student teachers' personal and professional development. This will greatly help in developing teachers with the right values, skills and knowledge to be effective teaching professionals, which will raise the quality of the teaching force in Singapore.

Keywords: Service learning, student teachers, professional and personal development.

1. Introduction

1.1. Background

Service-learning is gaining prominence as an educational pedagogy in learning institutions in Singapore. This is especially so in the field of teacher education, where student teachers participate in service-learning as part of their course requirements (Ch'ng, D'Rozario, Goh & Cheah, 2009). In the National Institute of Education (NIE), the main teacher training institute in Singapore, the Group Endeavours in Service-Learning (GESL) is an experiential learning opportunity for all NIE student teachers in which they complete small group projects in collaboration with local beneficiaires and charities. GESL was piloted in 2004 with 300 student teachers and was implemented in the Diploma and the Post-Graduate Diploma in Education in 2005, and the Degree in Education in 2006 (Teo & Lim, 2005). These progammes are designed to prepare beginning teachers for either primary or secondary schoolt eching (Ch'ng et al., 2009). Several main goals of GESL have been identified: to achieve self-awareness, social awareness, self-management, relationship skills and ability to make responsible decisions during the whole process of planning and execution of the project (Teo & Lim, 2009). This was in line with the socio-emotional competencies, values and professional skills as outlined by the Ministry of Education in Singapore (D'Rozario, Low, Avila & Cheung, 2012).

1.2. Purpose of study

As the interest in service-learning grows, there is a need to document the benefits and advantages of incorporating service-learning into the teaching curriculum in Singapore. Findings from several studies conducted on service-learning have revealed that service-learning was an effective means to prepare pre-service teachers for teaching practicum (Coffey & Lavery, 2015), promoting personal and social growth (Anderson, 2000) and to learn and understand more about themselves (Dudderar & Stover, 2003). However a review of the literature available shows that there are relatively few studies conducted on service-learning in NIE in Singapore. Hence the purpose of this evidence-based study is to explore how GESL contributes to the personal and professional development of student teachers in NIE.

2. Design

An interpretive, qualitative approach was used in this research study.

A hundred and six student teachers from 11 GESL groups were randomly selected to attend a 60 to 90-minute focus group interview. Each interview comprised of 8 to 10 participants. Ninety-four participants attended the interview sessions: 28.7% of the participants were male, while the remaining 71.3% were female. Almost half of them were aged between 21 to 25. The interview data were subsequently transcribed and a coding manual was created to identify social-emotional competencies and skills learnt or enhanced during their GESL project. The Interpretative Phenomenological Analysis was then used to analyse the data.

3. Results

Overall, there seemed to be a greater level of self and social awareness among the student teachers interviewed. Specifically, participants reported getting to know themselves better, in terms of their strengths and weaknesses and how they can contribute to the project. Many reported that they were able to draw on their strengths to complete their tasks and pledged that they would try to work harder on their weaknesses.

They were also made more aware of communities and organisations that need help in Singapore. They reported that through the GESL project, they realised that there were many different charitable organisations and groups of people who need help in Singapore that they have not noticed before. They also mentioned that this exposure would be useful when they enter the teaching force and share their experiences with their students.

There is also enhancement of collaboration, communication and people-management skills. Specifically, many participants reported that GESL had enhanced their ability to work with student teachers from different subject areas and backgrounds. They learnt to manage working relationships with one another by building rapport and through effective communication. Working with a relatively larger number of groupmates than they were used to (around 20 members per group) also honed their people management skills.

4. Discussion

These findings suggest that GESL contributed to student teachers' personal development, namely their socio-emotional competencies. These included self-awareness, social awareness, self-management, relationship management and responsible decision-making. In addition, GESL also promoted professional growth, in areas such as people management, communication, collaborative learning and practice and professionalism. This will greatly help in developing teachers with the right values, skills and knowledge to be effective teaching professionals, which will raise the quality of the teaching force in Singapore.

5. Conclusion

Service-learning can help student teachers to develop ideal attributes required for a teacher (D'Rozario et al., 2012), and make a difference to the community (James, 2010). They are given the opportunity to gain knowledge and skills in managing service-learning projects, and generate more self- and social awareness. In addition, they will learn to develop a positive outlook about their role as an educator. (Ch'ng et al., 2009). All these are important as they will go on to impact their own students later through leadership and service (Ch'ng et al., 2009). This will greatly help in developing teachers with the

right values, skills and knowledge to be effective teaching professionals, which will raise the quality of the teaching force in Singapore.

References

Anderson, J. B. (2000). Service-learning and preservice teacher education. *Learning in Deed Issue Paper, April,* 3-18.

Ch'ng, A., D'Rozario, V., Goh, K.C., & Cheah, H.M. (2009). Service-learning in teacher education at the National Institute of Education, Singapore. In K.C. Goh, V. D'Rozario, A. Ch'ng & H.M. Cheah (Eds.), *Character development through service and experiential learning* (pp. 83–92). Singapore: Pearson Hall.

Coffey, A., & Lavery, S. (2015). Service-learning: A valuable means of preparing pre-service teachers for a teaching practicum. *Australian Journal of Teacher Education, 40(7),* 86-101.

D'Rozario, V., Low, E. L., Avila, A. P., & Cheung, S. (2012). Service learning using English language teaching in pre-service teacher education in Singapore. *Asia Pacific Journal of Education*, *32*(4), 441-454.

Dudderar, D., & Stover, L.T. (2003). Putting service-learning experiences at the heart of a teacher education curriculum. *Education Research Quarterly, 27(2),* 18-32.

James, A. (2010). Pre-service student teacher professional development: Research and service-learning. *Problems of Education in the 21ˢᵗ Century, 26,* 66-78.

Teo, C.-T., & Lim, K.M. (2009). Character transformation through education on volition and service-learning. In K.C. Goh, V. D'Rozario, A. Ch'ng & H.M. Cheah (Eds.), *Character development through service and experiential learning* (pp. 93-107). Singapore: Pearson Hall.

INNOVATION THROUGH FLIPPED MODEL OF LEARNING: ENRICHING STUDENTS' AND INSTRUCTORS' EXPERIENCE

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Abstract

The paper provides a brief literature review of the FML, a description of the FML experience within the context of a multi-year project in a major research university – from designing to producing and integrating it into the second-language writing curriculum – and recommendations for scalable implementation. Special attention is given to the benefits of this approach for students as well as to its broader pedagogical advantages.

Keywords: Active learning, digital classroom, second-language writing, scaffolding, flipped model of instruction.

1. Introduction

The flipped model of learning (FML), also known as "blended learning", "reversed instruction," "inverted learning," etc. (Bergmann and Sams, 2012) has gained ground in higher education courses over the past decade. Whereas in the traditional classroom, students acquire *new* knowledge through direct instruction followed up by homework assignments, in the typically defined FML, students can study the new content independently at home prior to class through digital means, mostly through videos, PowerPoint Presentations, etc. (Moffett, 2015), and the instructional material is then engaged in class through focused hands-on activities. In such a method, the student becomes the center of attention, and educators are able to make the change from an instructor-driven approach to a more student-centered one. The appropriate use of technology with beneficial pedagogical outcomes continues to be a challenge for educators, but research has shown that the adoption of FML and its digital opportunities lead to enhancing differentiated learning and collaborative work for the students.

In an ongoing general education initiative, Boston University has launched the adoption of digital technologies and, in recognition of its pioneer effort to modernize the core curriculum, the College of Arts and Sciences Writing Program (WP) was awarded a generous grant through the University's Digital Learning and Innovation, Center for Teaching and Learning, and the College of Arts and Sciences to design and implement flipped learning modules on core skills. The project has unique benefits for second-language writers, as it targets individual language needs and learning styles, provides a collaborative learning environment, and fosters active learning strategies. The WP project envisaged design of FLM to begin in the English as a Second Language (ESL) division of the program, spread throughout the program, and eventually inform the practices of various departments across the university.

2. Brief theoretical background

The FML is deeply rooted in the philosophical theories of constructivism and social learning through incorporating active learning into a social construct (McLean et al., 2016). In terms of FML, this active learning approach ensures students have the opportunity during class to apply the necessary knowledge they have gained in order to master the material. The FML shares the values of many social learning theories. For instance, the social independence theory focuses on how goals are structured, and the impact of those goals on individuals' interactions, which may create certain outcomes. The FML also has close connections with peer-assisted learning. According to Foot and Howe (1998), peers provide a variety of enrichment opportunities: they are a consistent source of feedback, sharing resources, and, through interactive discussion, engagement and motivation. Through access to peers the FLM also develops interpersonal skills. According to Richards and Rodgers (2014), when adopting the FML, learning takes place through scaffolding as students complete the activities.

The FML also fits within the psychological theory of Bloom's Taxonomy. In 2011, the taxonomy's language was revised to focus on the cognitive processes by which learners encounter and work with the knowledge gained. The taxonomy provides a hierarchy of learning objectives based on

difficulty in mastery and is used in the FML to address the lowest difficulty level learning objectives. As a result, class time is dedicated to mastering higher learning objectives that require analysis and deep critical thinking (Krathwohl, 2002).

3. The FML approach in ESL writing courses

Vygotsky (1978) argued that the development of complex cognitive processes, such as writing, is improved in social contexts due to social interactions. For ESL students, the process of writing becomes even more complex, as they are faced with more challenges. It is thus the ESL instructors' responsibility to design more focused activities. Many studies have reported positive impact of scaffolding on the ESL students' progress and independence in language learning (Ferris and Hedgcock, 2014). The FML provides a unique opportunity for scaffolding writing and ongoing evaluation and analysis of student learning in the ESL classroom. In this collaborative environment, students have more opportunities to practice the target language with spontaneous feedback from the instructor (Mehring, 2016). In the setting of a writing course, students may complete a learning module, which includes videos, and low-stakes online activities. Students then come to class prepared to engage and participate in focused activities that target the learning outcomes of the course, and participate in writing workshops. During this process, the instructor moves around the class, assesses learning, engages with students, and offers immediate personalized feedback.

Figure 1. The Flipped Model of Learning Components in the ESL Writing Classroom.
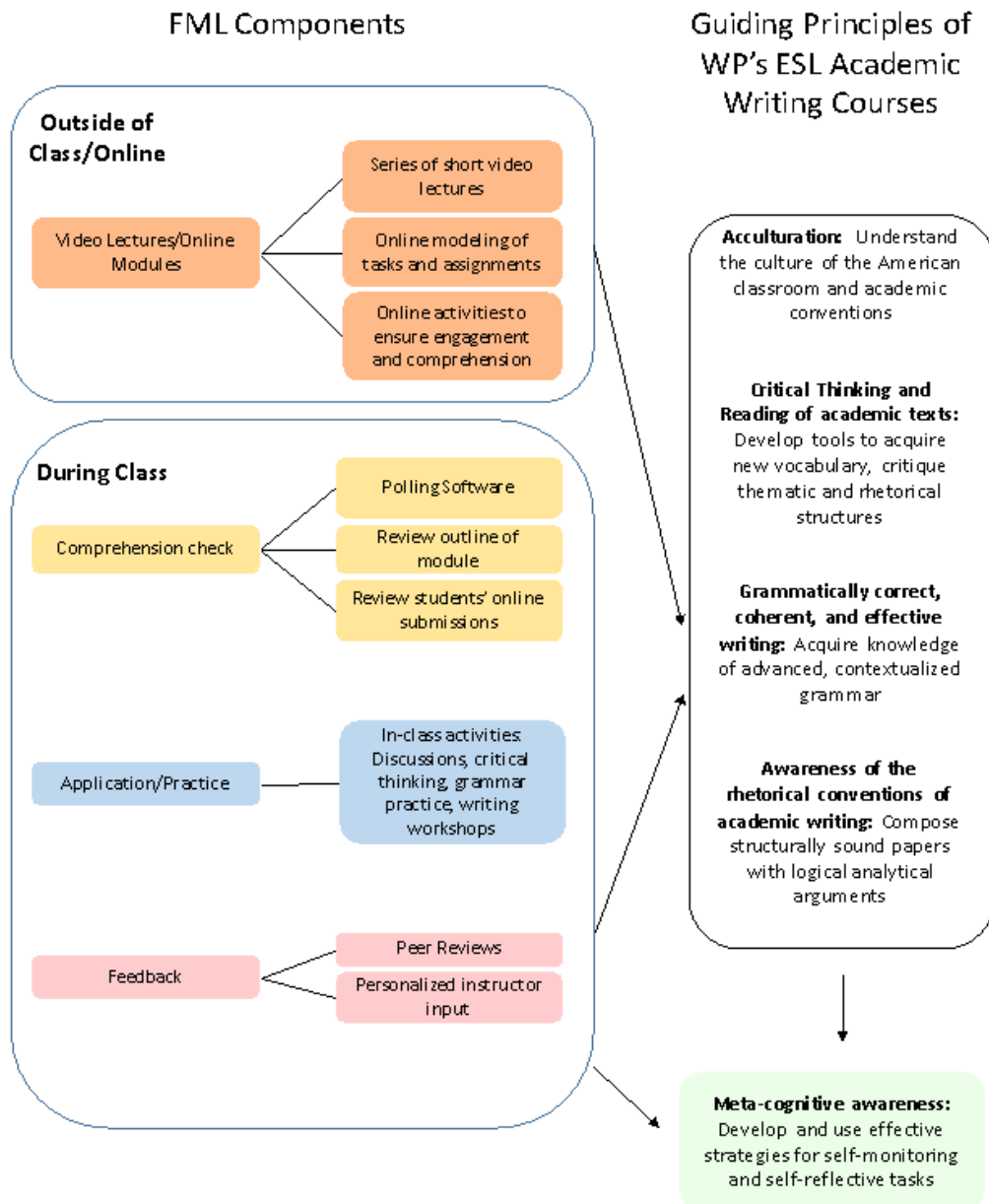
4. Project description

4.1. Choice of topics and collaborators' assignments

In our project, core elements of the ESL curriculum are selected for flipping, such as rhetorical conventions of academic writing, the writing process, structure of argumentation, various grammatical structures that present challenges in writing. Collaborators from among the faculty are recruited to write scripts for the modules.

4.2. Design of the modules

Collaborators are tasked with creating module types meant to be employed recursively in the ESL writing courses, and uploaded on the university's Learning Management System (LMS) to be copied and implemented by instructors. The collaborators commit to the following:

- Scripts for mini video lectures of 3-4 minutes presenting the content.
- An accompanying bullet point outline/PowerPoint slides of the key content points to show during the videos.
- Outline of the most important topics covered in the video lectures that students will have to fill out while viewing.
- Various online activities following the videos: short (1-2 sentences), low-stakes, not graded assignments.
- In-class follow-up activities.

4.3. Production of the Modules

FLMs are edited for content and video-taped. Videos are then uploaded as part of a learning module on LMS, such as BB, Moodle, Canvas. The LMS provides one location for students to access the learning modules at home, work on tasks, and submit their assignments for review by the instructor and/or peers. Production of the FLMs requires certain hardware and software:

4.3.1. Hardware. Minimum requirements for hardware: a computer/laptop with video and audio recording capabilities. This is scalable to a professional camcorder, wireless microphone, iPad (for teleprompter purposes), green screen, and light kit. Our project used the latter.

4.3.2. Software. Minimum requirements for software:

- Screen-casting software for taping on a computer/laptop: Screen-casting during narration allows for the instructor's presentation/slides and video to be captured. The software could be used for modules that require annotation and modeling of content. This project used Quicktime Pro on the iPad for modeling annotations.
- Presentation software: Presentations slides (i.e. PowerPoint slides) can be captured on the screen while recording videos. We used a combination of Microsoft PowerPoint and Goanimate for presenting the content in the videos.
- Video post-production software: If the scalable version of hardware is adopted, post production (editing) of the videos will become necessary, which requires professional video-editing software. In this project, Adobe Premiere Pro was used for post-production of videos.

5. Implementation

5.1. Student orientation to the FML:

FLM modules are assigned to students at least a week in advance. The following steps are necessary to ensure a smooth transition into this potentially unfamiliar teaching/learning style for students:

- Review student access to modules: the technology needs (i.e., access to computer and Internet), LMS, software requirements.
- Review instructors' access to students' information: the analytics and data on students' viewing of the videos, if available. This ensures students complete the modules in a timely fashion.
- Review format and structure of the modules: completing the outline of the module while viewing videos; submitting short online activities on the LMS; submitting a two-question survey on what students learned while completing the modules and remaining questions.

- Review deadlines: completing the module a day ahead of the class session. This gives the instructor the opportunity to examine the online submissions, and address any learning gaps in class.

5.2. Instructor follow-up

The process of following up on the FLMs takes careful planning in order to ensure student learning and effective completion. Below are some successfully implemented practices:

- Comprehension check:
  - ○ Review responses to the survey questions in order to address students' learning gaps.
  - ○ In class, review outline of the module: students may work in groups and/or or answer polling questions on the board.
  - ○ Review the students' submissions to the online tasks.
- Application of knowledge gained:
  - ○ Complete the in-class activity through interacting with peers and the instructor.

Hold related additional in-class workshops: pre-designed activities based on students' online submissions.

6. Benefits and challenges of FLM design and implementation

6.1. Students

Implementing the FML has proven to be a positive learning experience. When students use video lectures, they enjoy control over when, where, and how they acquire knowledge, and more importantly, they are in charge of the pace of their own learning (Heilesen, 2010). Their study habits have been shown to improve, including a fostering of independence (Jarvis and Dickie, 2009), an increase in self-reflection (Leijen et al., 2008), and the practice of reviewing material more regularly (O'Bryan and Hegelheimer, 2007). Students in our WP program have found the modules to be engaging, and the videos especially useful due to the possibility of reviewing them multiple times and thus avoiding potential miscomprehension due to language challenges. They report the modules are beneficial, especially for providing more opportunities to ask questions, and to apply the knowledge gained.

A potential risk when implementing the flipped modules is to overload the students. According to the literature, there have been many student reports of frustration with the unreasonable pre-class expectations of instructors (Yeung & O'Malley, 2014). In order for a module to be effective in achieving its learning outcomes, all students must complete it in advance and attend class prepared to discuss and engage with the material. Therefore, we recommend not assigning any other homework along with a module.

6.2. Instructors

In a flipped-learning environment, the role of the instructor becomes more focused than ever. The approach attributes an increased value to the instructors' knowledge and experience, and brings satisfaction through efficient use of time to reach the educational goals. Instructors are able to anticipate potential problematic areas in students' learning process and, by reviewing the students' online submissions, have immediate access to the knowledge students gain from the videos.

Instructors may initially find it challenging to fit the modules into their schedules. Experience has shown that beginning with a smaller number of modules per semester is more manageable both for the instructor and students. Flipping an entire semester or course is a cumbersome task, and taking smaller steps is more realistic.

7. Implications and recommendations

Adopting the FML is known to have the potential for decreasing instructor time commitment once the module has been implemented (McLaughlin et al., 2014); however, studies acknowledge the "upfront investment" (Davies et al., 2013) in time, resources, and support IT staff required for implementation (Ferreri & O'Connor, 2013). Planning a large-scale institutional modernization through a flipped classroom requires awareness of the extensive resources and time commitment expected from all parties.

In our experience, integration of the flipped approach into the writing curriculum provides a novel learning opportunity for students and moves the program away from a one-size-fits all model. Moreover, this model is in line with the University's General Education initiatives, and various programs and departments will be able to use the archive of modules and videos created by the Writing Program to

amplify their own faculty's teaching experience and to train students in academic writing across the disciplines. Beyond our context, the project provides a scalable and replicable model for programs at various levels of education.

References

Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day.* United States of America: International Society for Technology in Education.

Davies, R., Dean, D., & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course. *Educational Technology Research and Development*, *61*(4), 563–580. http://doi.org/10.1007/s11423013-9305-6

Ferreri, S. P., & O'Connor, S. (2013). Redesign of a large lecture course into a small- group learning course. *American Journal of Pharmaceutical Education*, 77(1).

Ferris, D. R., & Hedgcock, J.S. (2014). *Teaching L2 Composition. Purpose, Process, and Practice.* New York: Routledge.

Foot, H., & Howe, C. (1998). The Psycho-educational Basis of Peer-Assisted Learning. *Peer assisted Learning*. Mahwah, New Jersey: Lawrence Erlbaum Associates Inc. Richards, J. C., & Rodgers, T. S. (2014). *Approaches and methods in language teaching* (3rd ed.). Cambridge, UK: Cambridge University Press.

Heilesen, S.B. (2010). What is the academic efficacy of podcasting? *Computers & Education, 55*(3), 1063–1068.

Jarvis, C., Dickie, J. (2009). Acknowledging the 'forgotten' and the 'unknown': The role of video podcasts for supporting field-based learning. *Planet, 22*, 61–63. Leijen, A., Lam, I., Wildschut, L,. Simons, P.R.J., Admiraal, W. (2008). Streaming video to enhance students' reflection in dance education. *Computers & Education, 52*(1), 169–176.

Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into Practice, 41* (4), 212-264. doi: 10.1207/s15430421tip4104_2

McLaughlin, J. E., Roth, M. T., Glatt, D. M., Gharkholonarehe, N., Davidson, C. A., Griffin, L. M., Mumper, R. J. (2014). The flipped classroom: A course redesign to foster learning and engagement in a health professions school. *Academic Medicine*, *89*(2), 236–243. http://doi.org/10.1097/ACM.0000000000000086

McLean, S., Attardi, S. M., Faden, L., & Goldszmidt, M. (2016). Flipped classrooms and student learning: Not just surface gains. *Advances in Physiology Education*, *40*(1), 47–55.

Mehring, initial, (2016). Present Research on the Flipped Classroom and Potential Tools for the EFL Classroom. *Computers in the Schools 33* (1):1-10. doi:10.1080/07380569.2016.1139912

Moffett, J. (2015). Twelve tips for "flipping" the classroom. *Medical Teacher*, *37* (4), 331-336.

Vygotsky, L. S. (1978). *Mind in society: the development of higher psychological processes*. Cambridge, Mass.: Harvard University Press.

O'Bryan, A., Hegelheimer, V. (2007). Integrating CALL into the classroom: The role of podcasting in an ESL listening strategies course. *ReCALL, 19*(2), 162–180.

Yeung, K., & O'Malley, P. J. (2014). Making "The Flip" Work: Barriers to and Implementation Strategies for Introducing Flipped Teaching Methods into Traditional Higher Education Courses. *New Directions*, *10*(1), 59–63. http://doi.org/10.11120/ndir.2014.00024

PEER TUTORING: PROMOTING WELLBEING BY ENCOURAGING COOPERATIVE ATTITUDES WITHIN THE SCHOOL COMMUNITY

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Abstract

Youth distress is growing in Italy: statistics for 2014/2015 show an alarming rise of hospitalizations due to depression among young people, as well as a growth of suicides and an increasing percentage of school dropout (15% among natives and 34.4% among students born abroad). Our hyper-technological society seems to provide "easy" practical solutions but, at the same time, generates a dis-integrated social and values framework. This unease expresses itself through rejection of rules, indifference towards culture, revolt, various types of psychological disorder and aggressiveness (bullying). In order to come to terms with this set of problems, a high school in Merano (province of Bolzano, Italy) implemented a peer tutoring program (mediated teaching-learning strategies among equals) in cooperation with a middle school. Preliminary results suggest that students benefited from the program in all inquired dimensions. Students still remain one of the main resource of our schools. They have the ability to build informal networks of mutual support and to create cooperative groups that enhance comprehension, which is significant to all pupils, not only in didactic terms

Keywords: Peer education, life skills, integration, prevention, bullying.

1. Introduction

Youth malaise is growing in Italy. ISTAT (the Italian National Institute of Statistics) investigations for 2014/2015 (ISTAT 2014/2015) drew an alarming picture:
- 850.000 youths up to the age of 24 were hospitalized for depression (ISTAT, 2015);
- In 2015, suicide was the second most common cause of death after traffic accidents among youths aged between 15 and 25 years in Italy and accounted for 14 % of casualties in the age group (ISTAT, 2015);
- In 2014, more than 50 % of teens aged between 11 and 17 years experienced offence, disrespect and/or violence by other youths in the previous 12 months; 19,8 % regularly underwent "typical" bullying, i.e. the episodes occurred several times a month; 9,1 % experienced bullying on a weekly basis (ISTAT, 2014);
- In 2014, the share of youths aged between 18 and 24 who dropped out of school without a high school or vocational school degree reached 15 % among natives and 34,4 % among immigrants (Baggiani, 2016).

Youth distress has multiple causes that arise from complexity, from fast and radical social, economic and political change (Habermas, 1989), from heterogeneity and change of values, from the present inconsistency between different culture models, norms and communication patterns (Cerutti, 2012). Psychiatrists, psychologists and sociologists point out that in a society that is structured (or destructured) in such a manner, youngsters have growing difficulties to build and manage their own identity (Jervis, 1997), also with regard to society's needs and expectations. All this results in a weakening of identities and in youngsters who are more restless and often fall victim to discomfort and unease. Youth distress manifests itself in different ways and contexts, including family and school, where its forms of appearance may be similar: from refusal of rules, indifference towards culture and general rebellion to concrete manifestations like violence against oneself, nutritional disturbance, drug abuse. Clearly, in a society based on internal differentiation (Luhmann, 2012) and extremely high-speed communication and exchange between systems, no real dialog occurs. Instead, every system proceeds in a self-referred way. As a result, the stronger systems rule out the weaker ones (Luhmann & Febbrajo, 1990): especially the economic system manifests its hegemony by imposing its own rational, pragmatic and instrumental criteria, which differ profoundly from those of expression oriented social systems. As their personality is still under construction and their identity not completely defined (Palmonari 2011),

adolescents appear poorly equipped to face pressure and constraint by economy. Contemporary society generates new needs and new voids: values shift, living standards change and produce new expectations and, in a directly proportional way, new frustrations (Donati, 1994). Furthermore, it seems like the constant use of new technologies leads to cultural homologation and to new socialization modes, which, on the one hand, provide communication opportunities that were unimaginable years ago, but generate psychological, social and cultural self-isolation on the other hand (Corlianò, 2001). Generally, we can say that contemporary society makes it difficult for individuals to develop a kind of identity and socialization that meet the needs it generates. Hence, youth malaise can have multiple causes: the impossibility of being part of a certain group with spending power; the resulting feeling of marginalization; the growing absence of attachment figures in families; the perception that future is complex and precarious, together with the fear of not achieving self-fulfillment. This increases exponentially the risk of behavioral deviance, especially if various culturally, socially and materially critical circumstances combine. With respect to youth unease phenomena and in the attempt to prevent deviance, research about pro-social behavior of children and adolescents has lately increased. From a cognitive and affective point of view, pro-social behavior is considered a fundamental element as far as the regulation of negative emotional conditions like anxiety, anger and stress is concerned (Afolabi, 2013). To date, various studies concerning peer education have been conducted in Italy and abroad. The results of these studies, which date from the Seventies onwards, show positive effects for both the tutors and the tutees. The research carried out by Cohen and Kulik dates from 1982, the one by Hedin from 1987. Other studies were published in 1988 and 1989 by Damon and Phelbs and in 1990 by Foot and Morgan. Since then, surveys by Maheady et al. (2001) have highlighted numerous advantages of the peer tutoring approach. Developing emotional efficacy, empathy and positive interaction competences appears to be crucial for the arising of positive and cooperative reciprocity phenomena that can add to the construction of informal networks of help and cooperation which enhance comprehension significant to all pupils, not only in didactic terms (Zich, 2017). The "Peer tutoring - Time Banking Project" resulted from exchange of ideas and discussion among the teachers responsible for intercultural activities of the G. Segantini middle school and the Gandhi high school in Merano (province of Bolzano, Italy). The program, which is still in process, started in the 2016-2017 school year with the aim of providing support to pupils of the Segantini middle school, that is to say kids aged from 11 to 13, by deploying competences of Gandhi high school students aged between 16 and 18 who act as tutors to the younger peers. In 2015 the program was outlined and tutors were selected on a voluntary basis: a class council approved the applications submitted by students of the various curricula if requirements were not only related to school performance but also to the capability of taking on responsibility and meeting obligations as well as to communication skills. Activities usually take place in the afternoon. One two-hour session a week is scheduled for the better part of the school year. Tutors were prepared for their tasks in workshops and training sessions. The objective was to encourage students to develop empathy and relational competences so that they would be able to share personal resources, assume a dialogical attitude and create an atmosphere of trust and cooperation among peers as well as among students and teachers. Another aim of the program was the creation of a network of schools in the Merano area for common actions that contribute not only to the development of relational and school competences but also and above all to the control and prevention of dynamics related to youth distress.

2. Research purpose and methods

The aim of the present research, which is also part of a Ph.D. thesis, is to contribute to the validation of peer tutoring as a life-skill and metacognitive competence construction tool that can affect the tutors' professional choices and orientation. Another purpose of the research is to investigate in the long term the degree to which peer tutoring can serve as cultural integration tool for pupils with migratory background or of different ethnicity, as well as the effects on school drop-out and bullying in the involved schools.

2.1. Participants

In the initial phase 22 students (15 females and 7 males) of different areas of Gandhi high school, Merano (province of Bolzano, Italy), took part in the program "Peer tutoring and time banking". The sample consisted mainly of native Italians (95 %). Participation was voluntary. As for the education level of the students' families, 4 fathers (18,2%) and 8 mothers (36,4%) had an elementary or middle school degree, 4 fathers (18,2%) and 5 mothers (22,7%) had a high school degree and 14 fathers (63,6%) and 9 mothers (40,9%) had a university degree.

2.2. Materials

The pilot survey was based on two questionnaires. The biographical and social questionnaire consisted of 16 items and was aimed at providing a general picture of the youths' families as well as to spot possible correlations between education level, income and social level and competences. The second

questionnaire was the Italian version of the YES 2.0 (Hansen & Larson, 2005) and consisted of 66 items concerning different competence areas with 4-point Likert scale answers (from 1 = not at all to 4 = very much). The 66 questions were divided into 3 different categories, 6 scales and 21 subscales. The Personal Development category included the following scales: identity experiences (subscales: identity exploration and identity reflections), initiative experiences (subscales: goal setting, effort, problem solution, time management), basic abilities (subscales: emotional regulation skills, cognitive skills and physical skills). The Interpersonal Development category included the following scales: interpersonal relations (subscales: different relations among peers, pro-social norms), teamwork and social competences (subscales: group process competencies, feedback giving skills, leadership and responsibility), adult networks and social capital (subscales: family relations, linkages to the community and linkages to the world of labor and the academic world). The Negative Experiences category included the scale of the same name (subscales: stress, negative influence of classmates, social exclusion, negative group dynamics). Additional data were collected through participant observation of the peer tutoring meetings (40 2-hour meetings in 2 school years) and the 4 tutors training workshops, which lasted 2 days each. An observation pattern was developed for the investigation of different competencies (collaboration and participation; learning to learn and to teach, projecting, communicating) during the weekly meetings with the tutees. The skills that were observed and assessed were related to active listening, feedback giving after comprehension, observing of work schedules, goal setting, prioritizing, goal-oriented action planning and language adjusting. Furthermore, during the training students wrote reports about the training itself and about their experience as a tutor. These data, though, have not been taken into consideration for the present study, which is based only on the 2 above mentioned questionnaires.

2.3. Procedure and data analysis

Questionnaires were submitted to the students collectively at school. The questionnaires were filled in during teaching time. Previously, youths had been specifically instructed about the completion and had been asked to give their written consent to the inquiry, which was conducted by personnel trained by the Free University of Bolzano. The answers provided by the students were digitalized. Data analysis was performed with the statistics software R (R Core Team, 2016).

3. Results

The analysis of variance (ANOVA) with repeated measures conducted on the results of the YES 2.0 test using the factor subscales revealed a significant effect: $F_{(20,400)}=29.446$, p.<0.01, $\eta2=0.53$. Figure 1 shows that the most negative factors are referred to negative aspects. This finding was verified through the evaluation of the scales: $F_{(6,120)}=62.398$, p.<0.01, $\eta2=0.60$, all positive scale values ranging from 2.5 to 5, whereas the "Negative experiences" scale has a mean value of 1.5.

Two mixed effect regression models (Pinheiro & Bates, 2000) were run while considering the answers to the YES questionnaire as dependent variable. The two mixed models fitted on data had the following structure: father's and mother's education, the number of devices available in the family, and either "category" or "scale" were included as fixed effects, while the item and the participant were included as random effects. The model using "categories" showed a significant difference for the category "negative experiences" in comparison with the other two categories (Interpersonal development: beta=1.292, SE=0.173, df=63.03, t=7.462, p.<0.001; Personal development: beta=-1.160, SE=0.169, df=63.02, t=-6.861, p.<0.001). The model using "scale" showed that the scale Negative Experiences was significantly different from all the other scales (see table 1). In none of the two models, education (for either fathers or mothers) was significant, so as the number of technological devices available in the family.

Figure 1. Bars represent the average values obtained for each subscale of the YES, whiskers indicated the standard error means.
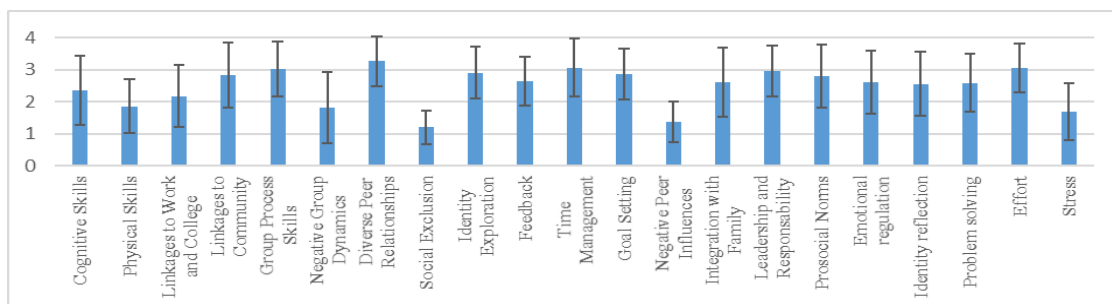
Table 1. The table represents the paired comparisons among the several scales that resulted to be significant to the mixed model.

contrast	beta	SE	df	t.ratio	p.value
AdultNetwork - NegativeExperiences	0.9592	0.2276	58.98	4.214	0.0016
BasicSkills - NegativeExperiences	0.8763	0.2036	58.99	4.304	0.0012
identityWork - NegativeExperiences	1.2064	0.2400	58.98	5.028	0.0001
Initiative - NegativeExperiences	1.3651	0.1935	58.99	7.056	<.0001
Interpersonal Relationships - NegativeExperiences	1.4647	0.2278	59.11	6.431	<.0001
NegativeExperiences - TeamworkSocSkills	−1.4048	0.2036	58.99	−6.900	<.0001

It appears particularly significant that in the scale area in Figure 2 the mean values of answers concerning Interpersonal Relationships (2.99), Teamwork and Social Skills (2.93) and Initiative Experiences (2.89) almost reach a value of 3 on the 4-point Likert scale. In the subscales Diverse Peer Relationships (3.26), Leadership and Responsibility (3.05), Group Process Skills (3.03) and Time Management (3.06), values are above 3. With respect to the aim of the research, results of the YES 2.0 show an increment perception precisely in the investigated characteristics, which enable students to establish significant contact with peers, to increase their teamwork skills, to take over and share responsibility and to improve their time management. As for peer tutoring as a tool that affects the tutors' professional choices and orientation, however, the YES 2.0 questionnaire results show quite lower values, slightly above 2, with respect to linkages to the world of labor and the academic world.

Figure 2. Bars represent the average values obtained for each scale of the YES 2.0, whiskers indicated the standard error means.
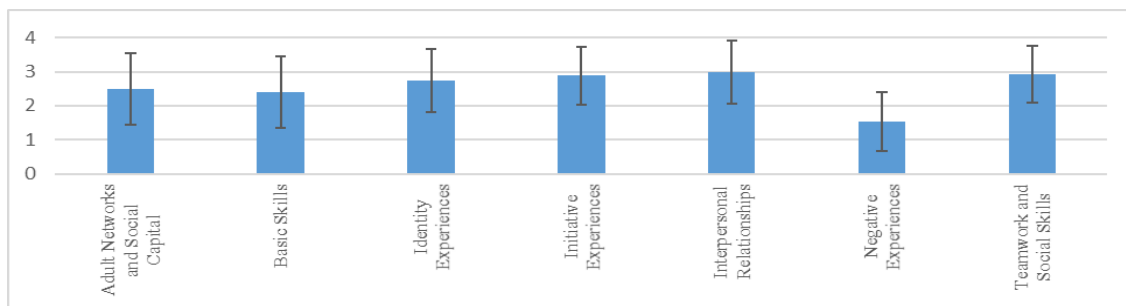
4. Discussion

Youths need to play an active role in their own learning and growing process. This consideration led to the setup of the Time Banking Project, aimed at promoting a positive development of autonomy, relational, metacognitive and empathetic skills. The first outcome of the research is the participants' statement that the peer tutoring strengthened many of their life skills experience (initiative, identity and teamwork experiences). This suggests that the "traditional" way of experiencing school and the class community might not be enough to effectively stimulate life skill development, and that it might be useful to provide activities that oppose youth distress and deviance. That's why we think it is important to offer students the opportunity to participate in projects like the Peer Tutoring Program that targets specific objectives in this regard. If implemented as described above, peer tutoring can generate positive changes and enable participants to develop aptitude for initiative, goal setting and goal achieving, time and emotion management as well as empathy and the ability to establish relations with others. In particular, tutors indicated the improvement of key skills like the ability to establish relations with peers, to work hard at their goals, to take over responsibility and the ability to manage relations, rights and duties when working with others. Contrary to other evidences (Nagin & Tremblay, 2001), data analysis showed that neither the contribution of the parents' education nor the number of available technological devices is relevant. This could suggest that the mentioned benefits can be generalized and apply to different situations, without altering the effectiveness. One limit of the present research lies in the fact that to date a comparison with students who did not take part in the program is still lacking. Introducing a control group could help highlighting the added value of the experience. In fact, positive changes could also be stimulated by different experiences that have the same impact. A second limit resides in the retrospectiveness of data collection, which excludes the possibility of a more reliable comparison of competence levels before and after the experience. Soon we will submit new questionnaires concerning 10 life skills defined by the WHO to all classes (third and fourth grade students aged from 16 to 18) from which future tutors will be selected. In our opinion, adding this kind of survey and including a control group and the pre and post activity evaluation will make the above claimed results more significant. In

particular, we expect the students who took part in the peer tutoring program to show different (and better) competences regarding life skills than those who did not or those who took part in other social projects (for instance, caring for younger kids during sport activities or in scout groups). Despite the limitations referred to above, this first research shows the potential impact of peer tutoring on the development of personal and interpersonal skills. We think that the benefits of peer tutoring also affect the enhancing of autonomy in decisional processes and in the development of the ability to face new challenges.

References

Afolabi, O. A. (2013). Roles of Personality Types, Emotional Intelligence and Gender Differences on Prosocial Behavior. *Psychological Thought*, *6*(1), 124–139. https://doi.org/10.5964/psyct.v6i1.53

Baggiani, S. (2016). La lotta all'abbandono precoce dei percorsi di istruzione e formazione: strategie, politiche e misure. *Quaderni di Eurydice n. 31*. INDIRE, 165.

Cerutti, R. (2012). Comunicazione e disagio giovanile nell'era della globalizzazione. *Rassegna di Psicologia, 29(2),* 5–10. https://doi.org/10.7379/70999

Cohen, P. A., & Kulik, J. A. (1981). Synthesis of Research on the Effects of Tutoring. *Educational Leadership*, *39*(3), 227-29.

Cohen, P. A., Kulik, J. A., & Kulik, C. L. C. (1982). Educational outcomes of tutoring: A meta-analysis of findings. *American educational research journal*, *19*(2), 237-248.

Corlianò, M. E. (2011). *Vite mediate. Nuove tecnologie di connessione e culture di rete: Nuove tecnologie di connessione e culture di rete*. FrancoAngeli.

Damon, W., & Phelps, E. (1988, April). Three approaches of peer learning and their educational uses. In *annual meeting of the American Educational Research Association, New Orleans, LA*.

Damon, W., & Phelps, E. (1989). Strategic uses of peer learning in children's education. In *Peer relationships in child development.* (pp. 135–157). Oxford, England: John Wiley & Sons.

Donati, P. (1994). *La famiglia nella società relazionale: nuove reti e nuove regole* (Vol. 6). FrancoAngeli.

Foot, H. C., Morgan, M. J., & Shute, R. H. (1990). Children's helping relationships: An overview. *Children helping children*, 3-17.

Habermas, J. (1989). The structural transformation of the public sphere, trans. Thomas Burger. *Cambridge: MIT Press*, *85*, 85-92.

Larson, R. W. (n.d.). The Youth Experiences Survey (YES) 2.0, 3–5.

Hedin, D. (1987). Students as Teachers: A Tool for Improving School Climate and Productivity. *Social Policy*, *17*(3), 42-47.

I.STAT Istituto Nazionale di Statistica. (2015). *Ospedalizzazione per disturbi psichici per aggregati clinici e tassi di età.* Retrieved from http://dati.istat.it/Index.aspx

I.STAT Istituto Nazionale di Statistica. (2015). *Statistiche Salute e Sanità. Cause di morte*. Retrieved from http://dati.istat.it/Index.aspx

I.STAT Istituto Nazionale di Statistica. (2014). *Statistiche Report. Il bullismo in Italia: comportamenti offensivi e violenti tra i giovanissimi*. Retrieved from http://dati.istat.it/Index.aspx

Jervis, G. (1997). *La conquista dell'identità: essere se stessi, essere diversi*. Feltrinelli.

Luhmann, N. (2012). Theory of society, vol. 1. *Trans. Rhodes Barrett. Stanford: Stanford University Press*.

Luhmann, N., & Febbrajo, A. (1990). *Sistemi sociali: fondamenti di una teoria generale*. Il Mulino.

Maheady, L., Harper, G. F., & Mallette, B. (2001). Peer-mediated instruction and interventions and students with mild disabilities. *Remedial and Special Education*, *22*(1), 4-14.

Nagin, D. S., & Tremblay, R. E. (2001). Parental and early childhood predictors of persistent physical aggression in boys from kindergarten to high school. *Archives of General psychiatry*, *58*(4), 389-394.

RDevelopment, C. O. R. E. (2012). TEAM 2009: R: A language and environment for statistical computing. *Vienna, Austria. Internet: http://www. R-project.org*.

Zych, I., Farrington, D. P., Llorent, V. J., & Ttofi, M. M. (2017). Protecting children against bullying and its consequences. https://doi.org/10.1007/978-3-319-53028-4

MULTISENSORY CLASS ROOM AS A PEDAGOGIC INNOVATION

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Abstract

The paper presents the concept of Multisensory Classroom (MSC) and it applications at the University of Applied Sciences. The MSC has been in use since 2009 and it was recently updated in January 2018. In short, a MSC is an easily modified space equipped with audio technology and projectors covering three wall spaces. The space includes a storage facility with various objects, such as textiles and light furniture. Teachers and students use the space to create an inspiring learning environment and to demonstrate multisensory experiences. The process of creation of the space is as important as the final outcome. The MSC encourages students to explore various learning content from new sensory perspectives. Furthermore, the space engages students in creating a tangible creation and a multisensory experience.

Originally, the MSC was introduced in association of an introductory course of immigrant students to explore their cultural heritage. To use of the MSC has evolved and today, it is used for variable purposes. The paper outlines applications of the MSC and its future possibilities, as well as identifies need for future study in terms of the physical learning environments.

The MSC relates to the Laure's Learning by developing pedagogy, according to which learning takes place in work-place oriented projects. As a result students gain competence to adjust in rapidly changing working environments. The paper highlights, how a MSC encourages experimental learning and enhances positive learning experience.

The paper draws from a questionnaire conducted among the users of the MSC. It outlines for which purposes the MSC was used, and how the MSC support learning. The proceeds to present suggestion of future applications of a MSC. The MSC including its technological possibilities is an inspiring model to advance the phenome based learning, which as a term is a fundamental component of the recently published new Finnish national basic education curriculum. The paper concludes that a MSC enhances the learning experience and inspires pedagogical innovation.

Keywords: Physical learning environments, pedagogic innovations, technology in teaching, multicultural learning.

1. Introduction

The paper outlines the concept of the Multisensory Class Room (MCR) and its teaching applications at Laurea University of Applied Sciences. It discusses the different purposes and uses such as the MCR as an inspiring learning environment and as an open space inspiring creation. Then it proceeds to discuss current and future possible applications of a MCR. As its name indicates, the MCR enables to visualization of concepts, realities and learning content by using multisensory experiences. Originally, the multisensory space was created for the special needs of immigrant students so that they could better explore and present their cultural background and heritage. Nevertheless, its use has evolved and today it enhances the learning experience and inspires pedagogical innovation.

More recently, the virtual learning environments have dominated the discussion over learning environment. However, equally so the importance of physical environment and its relevance to inspire learning should not be neglected. The current literature indicates that more focuses been paid in the physical learning environment on the basic educational level compared to the institutions of higher education. In general in the research of teaching spaces in basic educational level indicates that the space design including their equipment do not support the possibilities provided by modern teaching pedagogy and learning processes. (Kuuskorpi, 2012) On the contrary, a poor physical space may considerably hamper the pedagogical innovation and development, as well as have negative effect on the operational educational culture.

A positive good learning environment have several characteristics. Learning environment should inspire individuals to learn and to take responsibility for their learning and the learning environment amenity. A good learning environment supports student teacher interaction and interaction between individual students. According to the Finland's renewed National Core Curriculum for Primary Education a well-functioning learning environment promote interaction, participation and a 'knowledge-building community'. In addition, a functional learning environment encourages cooperation with school districts, families, communities and external experts. The learning environment must offer possibilities for creative learning solutions. Moreover, they allow to explore the learning content from different perspectives. (National Board of Education, 2014; Malin, 2011). Senses, emotions and the joy of learning are considered as new viewpoints in the recent basic education national curriculum (Turpeinen 2016).

Furthermore, the MCR relates to Laurea's Learning by Developing pedagogical model, which encompasses working place-oriented projects. It aims to provide students with competence to allow them to manage diverse situations in the constantly changing working environment. (see more about the LL by D).

2. Survey method

The MCR was introduced in 2009 at Laurea Tikkurila campus and were newly equipped in January 2018. The MRC as a physical space can easily be modifiable according to the needs of its current users and purposes. It includes audiovisual technology, including three data projectors capable of reflecting the entire wall space. Additionally, it focuses on tangible elements, such as things to touch and taste. Next to the classroom there is a small storage of various objects, curtains, textiles and some light furniture.

The purpose of the study was to investigate, how and for which purpose the MCR is used? What kind of ides the users have and how they experience that the use of the class room supports learning? And finally, to explore the challenges in regards of the use of the MCR and how to possibly overcome them.

Data Collection was conducted as an e-form survey. The survey period was three months from February to April in 2018. The questionnaire was sent to the all 26 users including teachers, students or support staff, who had specifically reserved the space in the on-line room request system. The response rate was 54% (14 out of 26). Between February and April 2018 the MCR had been reserved for about twenty different activities. Fourteen people answered the questionnaire, equally divided between students (7) and teachers (7). All the students reported that they used the MRC for the first time. Most of the teachers had used the MCR previously, although some have used it for the first time. Some of the teachers, who had used the space for variable purposes provided more detailed feedback and suggestions.

3. Findings

The finding indicate that both teachers and student view the MCR as an inspiring learning environment and further as a creative space to be used, for instance, present their projects. The teachers used the MCR for teaching, tutoring or meetings as an inspiring space. Mostly teachers reserved the space for an interactive lesson on one occasion during a course module, with the exception of (basic) French lessons, which were regularly taught in the MRC.

The students, who answered the survey had used it for team project. They participated in creating the spaces together with immigrant youth from integration course. One student group chose to present their project work in multisensory space.

In conclusion, the main motivation for the teachers to choose the MRC was to promote pleasant learning atmosphere. Teacher pointed out that the MRC provided a more relaxed space to encourage discussion and activate learning. One of the central arguments of the 'positive pedagogy' is that people who experience positive emotional stage are more likely to explore the learning content from a wider perspective and engage in critical thinking. Positive emotions enhance learning. (Kumpulainen, Mikkola, Rajala., Hilppo & Lipponen 2014, 228-233).

Some of the comments included,

"*Yes, it did. Relaxing and providing new ideas to discussion, out of ordinary place*"

"*Different spaces allow for different learning experiences: peaceful space is a good reflection and discussion, while colorful space stimulates different learning*"

The students utilized the MSC to make context visible or multisensory. Some students participated in creating the space with the immigrant students. The immigrant students were participants of an introductory course to a Finnish culture and language. These student projects focused on the cultural aspects and heritages. Prior to choosing how to utilize the space effectively the students had to conduct extensive background research of the cultures and cultural heritage they wish to present by using the space. In essence, they had to create information and to communicate it by using multisensory elements (cf. Kumpulainen et al 2010, 17) This is because the creation of a multisensory space as a learning environment, project or as a space to present findings, requires a careful consideration, how to utilize various options available in the space. The process goes beyond simply choosing the most convenient presentation method. Essentially, choosing any aspect or tools requires a justification, why a particular choice was made and how it contributes to the final outcome. One of the advantages is the challenge to create an experience may it then be a simplified or a complex presentation of the learning content, project outcomes or even a pedagogical choice of teaching method.

The students enrolled in the social service program created spaces together to understand better the background of the immigrants and empower the immigrant students. Simultaneously, when learning about the subject matter, they had to practice intercultural communication skills. As a result, it could be assumed that students' intercultural skills improved. Several researchers point to the need to increasing interaction as a necessary pre-requisite to improve understanding between groups and individuals from different cultural backgrounds. (f. ex Jokikokko&Uitto 2016; Soilamo, 2008).

The Laurea students appreciated the opportunity to interact with immigrant students. The fact that the activities were possible with very limited language skills can be viewed as one of the many benefits of a MRC. Lastly, students appreciated the opportunity to work on something 'concrete' and tangible.

"The joint action created a relaxed atmosphere for the encounter of different cultures, both linguistically and culturally, for learning."

Table 1. A Summary of Survey Answers.

	Teaching	Tutoring	Other activities
What kind of activities?	- International Tutor student education sessions, - Multicultural Peda-sessions - French and English lessons - about sociocultural work and how to use Multisensory space as a tool - Wellness at work - Music as therapeutic tool	Tutoring students	meeting presenting our student project a space together with young immigrants (4 answers)
How did the space support learning?	- Peaceful space was beneficial for reflections and discussions - colorful and multisensory simulation activated learning - helps students to interact in foreign language - inspired students to discuss more deeply about the concept of welfare - students learned creative methods by creating the space with music and pictures	- promotes the relax atmosphere and interaction	- the co-creation of the space created a relaxed atmosphere, both to use the language (with limited skills) and to learn about the cultures - it promoted the interaction and learning other cultures

4. The way forward – practical suggestions to improve the MSC

It was suggested to utilize the MSC more frequently and to include a feedback loop, regarding the use of the MSC in the learning context, into the process.

The actual multisensory space is currently five meters five meters long. The space is best suited for a small group up to twenty people. Therefore, several teachers expressed the opinion that the space could be larger. Alternatively, different spaces of different sizes for different purposes could be included.

Laurea's multisensory space has been implemented by using low-cost technology, e.g. equipment that would be available in any school or university. One of the consideration when choosing the technology options was that students should be able to operate the space independently. Since the latest update the space includes data projectors, which project the picture on three walls. Three projectors and the audio system are connected in the class room computer. In addition, an input cable can be connected in any user device. The use of three wall wide landscapes led to a situation that there was no more space to use curtains or printed pictures at the walls. In addition, the new neutral and relaxed furniture are favored by users.

One third of answers indicated that they had had some problems with IT or technology. The main reason could be that most of the technology was new. Although teachers may have used the MSC more frequently they reported more technical issues possibly because some of the teachers had not participated in any introductory technical training. Whereas all students had participated in an introductory information and technical training session. Therefore, it is important that all technology should be easy, functional and that all users participate in an introductory lesson how to operate the space and all technology included.

One of the teachers proposed an acquisition of a 360 degree image reflection technology, because in his/her opinion such technology would enhance the visual sensory experiences. Moreover, it was stated that an annual budget allocations should be made available.

Other suggestions included,

"I would hope that space would be available twice a month for meditation and as a quiet and safe space."

"Floor cleaning must be ok, curtains and materials must be clean."

The MSC remains popular. The design elements of the space are easily modifiable.

5. Discussion

Today, it is widely accepted pedagogical knowledge today that people learning styles differ and that people also engage different sense in learning process. Technology enhanced learning is an important element of the MSC. When young people are able to benefit from their technical skills they find the learning more meaningful. This also supports the digital literacy objectives of a higher education.

Furthermore, on the one hand technology encourages students to work autonomously. On the other hand, they belong to a group and create something tangible together. (Salmela-Aro 2016,94). An additional interesting aspect of a MSC is its ability to bridge generations. Therefore, the MSC is especially relevant in the social and care sector education modules and programs. Consequently, the MCS should be integrated in the study programs. In conclusion, the use of the MSC in social and care sector professional education is clearly an important aspect requiring more study.

The key ideas behind the MSC was a space, which could be used without prior training and which is truly multifunctional. The aim of the MSC is not to serve only as a multisensory space but also to be useful in a wide variety of learning activities. Laurea has a mobile version of the MSC, which can be used and modified to fit public spaces, such as libraries, day care centres, museums and community houses. The mobile version, however, does not replace the need for more multisensory learning environments in all levels of educational institutions.

One of the reasons why the basic education national curriculum was modified was to include new perspectives to learning and student engagement. The new national curriculum sees as a starting point the 'phenomenon-based learning'. (National core curriculum; Symeonidis& Schwarz 2016) As previously stated the basic education physical learning spaces have not kept up with the pedagogic requirements. A MSC could be seen as one of the solution and a model to advance the 'phenomenon-based learning'. In general, learning experience should include engaging all senses and use movement in learning and in doing so results in more joyful and flexible learning experience.

As a method, the MSC not just promotes flexible learning and overall wellbeing but it can also be seen in the light of sociocultural empowerment. It prompts discussion on individual and on a group level about identity and what a leaner's identity consists of. Due to the open nature of a MSC, it is an optimum model for any type of interdisciplinary study and working environment. The process of creating a MSC for each project or learning objective is just as important as the final product. To sum up, the MSC is all about experiences, creativity and inspiration.

References

Jokikokko, K & Uitto 2016 The significance of emotions in Finnish teachers' stories about their intercultural learning http://www.tandfonline.com/doi/full/10.1080/14681366.2016.1201128

Kumpulainen, K; Krokfors, L; Lipponen, L; Tissari, V; Hilppö, J; Rajala, A (2010). *Learning Bridges – Toward Participatory Learning Environments.* http://hdl.handle.net/10138/15631

Kumpulainen, K, Mikkola, A, Rajala,A, Hilppo, J & Lipponen,L (2014). Positiivisen pedagogiikan jäljillä. In Uusitalo-Malmivaara, L (ed.). *Positiivisen psykologian voima.* Jyväskylä: PS kustannus

Kuuskorpi, M. (2012). *Tulevaisuuden fyysinen oppimisympäristö : Käyttäjälähtöinen muunneltava ja joustava opetustila.* Turun yliopisto).

Malin, A. (2011). *Kotitalouden opetustilat osana kehittyvää oppimisympäristöä : Asumistoiminnot ja opetussuunnitelma muutoksen määrittäjinä.* Kotitalous- ja käsityötieteen laitoksen julkaisuja 26. Väitöskirja. Helsingin yliopisto. Käyttäytymistieteellinen tiedekunta. Opettajankoulutuslaitos. National Board of Education, 2014.

National Core Curriculum for Basic Education (2014). Finnish National Board of Education. Publications 2016:5.

Niemi, H., & Multisilta, J. (2014). Koulu rajattomuuden keskellä. In H. Niemi, & J. Multisilta (Eds.), *Rajaton luokkahuone.opetus 2000.* (pp. 12-35). Jyväskylä: PS-Kustannus.

Raij (2011) Kehittämispohjaista oppimista. Lbd-opas. https://www.laurea.fi/dokumentit/Documents/LbD_opas_Raij.pdf

Räty, M., Sivonen, S., Saarela, J., Laurikainen, H., Lundell-Reinilä, H., Taipale, S., et al. (2014). Aistien menetelmä (2. uusittu p. ed.). Vantaa: Laurea-ammattikorkeakoulu, Tikkurila.

Salmela-Aro, K. (2016).Mieli koulussa. In Ylikangas, M: *Mielen salat.* Suomen akatemia. Gaudeamus.

Soilamo, O. (2008). *Opettajan monikulttuurinen työ.* Turku: University of Turku.

Symeonidis, V., & Schwarz, J. F. (2016). Phenomenon-Based Teaching and Learning through the Pedagogical Lenses of Phenomenology: The Recent Curriculum Reform in Finland. Forum Oświatowe, 28(2), 31–47. Retrieved from http://forumoswiatowe.pl/index.php/czasopismo/article/view/458

Turpeinen, T (2016): Oppiminen & Tila. Fyysisen oppimisympäristön vaatimukset uuden opetussuunnitelman näkökulmasta. Tampere University of Technology School of Architecture.

ORGANIZATIONAL STRUCTURE FOR 21ST CENTURY HIGHER EDUCATION INSTITUTIONS: MEETING EXPECTATIONS AND CROSSING CHALLENGES

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Abstract

Amidst globalization, marketization, privatization Higher Education Institutions (HEIs) have experienced radical transformations. The basic expectation of organizational structure for 21st century HEIs is to ensure appropriate reporting mechanism, avoiding conflict, facilitate collaboration and enhance productivity. Much depends on the structure of the HEIs in order to meet the needs of stakeholders, align with best practices around the world and to overcome the challenges in complying with the requirements of various regulatory bodies at local, regional and international level. The research aims to examine the roles of organizational structure within higher education context in achieving the requirements of accreditation and professional bodies at national and international level to ensure effective provision of education, quality assurance and enhancement.

Keywords: Quality assurance, hierarchy, institutional imperatives, reporting mechanism, decision making.

1. Introduction

Higher Education Institution (HEI) in 21st century has undergone radical changes due to internationalization, revolution in Technology; focus on employability; stakeholders expectations; requirements of accreditation bodies; endeavor to continuous quality enhancement; commodification etc. To cope up with this transition the organization structure for HEIs is in a crossroad and no unique structure exists in a dynamic environment.

Organization structure depicts the hierarchy underpinning the lines of authority and responsibilities through policies and procedures (Scott, 2013). HEIs around the world exhibit diverse organization structure in terms of public and private; competitive and collaborative; national and international partnership; flexible and rigid; traditional and dynamic and so on. HEIs vary in terms of Research University, Subject Oriented Colleges, Community College, Minority-Serving Institution, Colleges of Applied Sciences, Associate's Colleges, Postgraduate Colleges and Universities etc.

However the basic principle of organization structure for 21st century HEIs, centers on the formation of councils and their Terms of Reference along with a clear reporting system. Academic units are supported by administrative units to ensure quality practices in offering fit for purpose academic program and best services catering to stakeholders' expectations. The HEIs are governed by a number of Centers, Units/Offices to ensure the effectiveness of the academic and administrative functions such as: Quality Assurance; Research & Community Engagement; Admission and Registration; Students Services; IT; Library; HR; Finance etc. The common practices in HEIs are to ensure effective provision of education, quality assurance and enhancement, appropriate reporting mechanism, national and international collaboration, avoiding conflict etc. The expectations of the stakeholders, requirements of the accreditation and regulatory bodies are diverse in nature and much depends on the contextual factors. HEIs focus on benchmarking with international best practices in academics, quality assurance, strategic planning etc. to establish competitive advantage in higher education landscape. The conflict arises when the HEIs comply with the requirements of multiple regulatory bodies locally and prepare for international accreditation. Some HEIs start adapting to international standards and later on align with national standards or vice versa. Organization structure of HEIs reflect the long term aspiration of the organization in attaining sustainable development, promoting innovation and entrepreneurship, connecting impact and quality, measuring institutional performance indicators, partnering with national and international bodies. Organization structure now adapts to new environment challenges through restructuring of governance and management to ensure accountability (Shariffuddin et al., 2017). Diverse source of funding also influences the structure of 21st century HEIs and its linkage with market opportunities. The vision towards

involving students in decision making, engagement with community, impact of research in commercialization, focus on innovation and entrepreneurship, creating cross cultural linkage can further define the restructuring of organization.

1.1. Organizational Structure

Organizational structure has impact on managerial decision making, organizational learning, long term goals, performance etc. (Duong, 2013). In a functional structure employees with similar specialization are grouped together expediting decision making and common understanding. A divisional structure groups the organization functions into division focusing on creating parallel teams. A matrix structure is appropriate for a large organization with autonomy and decision making focusing on planning and teamwork. The flat organizational structure depicts very few layers of management and promotes decentralized decision making in a participative framework. This type of structure calls for less supervision and bureaucracy enhancing the communication in organizational context. The hierarchical organizational structure represents the layout of a pyramid with multiple entities reporting to supervisors or line managers as per the hierarchy.

Organizations can be differentiated based on three dimensions: success or failure of the organization, coordinating/reporting mechanism, extent of decentralization in decision making. Organizational strategy results in five structural configurations: simple structure, machine bureaucracy, professional bureaucracy, divisionalized form and adhocracy (Lucenberg, 2012). Management should take into consideration the efficiency and effectiveness of organization in designing the structure since organization structure has impact on performance of the organization (Maduenyi, Ajagbe, 2015). Centralized universities follow a bureaucratic structure which does not encourage flexibility and innovation. Decentralized universities allow flexibility and promote change in academic and administrative operations. However a balance between centralized and decentralized system can lead to desirable outcome (Zziwa, 2014). Departmentalization is primarily done based on functions, product or service, market, customer, geographic area, matrix etc. Large and diversified organizations combine different forms of departmentalization. Departmentalization leads to delegation which aims to achieve the results involving others. Delegation in turn ensures authority and responsibility of the employee at different levels (Montana & Charnov, 1993). Literature supports existence of multi-dimensional models to reflect organizational behavior across organizational types. J. Victor Baldridge's three dimensional model describes organization as "bureaucratic, collegial, and political; Lee Bolman and Terrence Deal's four-cornered frame presents structural, human resource, political, and symbolic organizational structure"; Robert Birnbaum's five dimensions model considers "bureaucratic, collegial, political, anarchical, and cybernetic structure" (Eckel, & King, 2004).

The aim of this paper is to propose a framework for HEIs which shall align the requirements of accreditation and professional bodies at national and international level.

2. Methodology

The research undertakes library research method to study the organization structure for sample universities in Bahrain, United Arab Emirates, Australia, USA and UK. The analysis and comparison of the organization structures explores the similarities and diversities in the governance to achieve quality and improvement. The layers of management depict top/senior management, deanship and leadership at department level in HEIs. Given the requirements of national and international accreditation standards and expectation of the stakeholders a framework for an ideal 21st century HEI is designed overcoming the challenges in a competitive environment.

3. Results and analysis

The following section describes the results and analysis of the library research adapted for the study.

3.1 Nature of Organizational Structures in HEIs

The organizational structures of HEIs differ in public and private universities around the world. However the study identified sample organizational structures in selected countries around the world reflecting diversity in type, governance, layers of management, institutional priorities etc. More specifically, the structures of 2 sample universities from countries like Bahrain, UK, USA, Australia, and United Arab Emirates (UAE) have been analysed to summarize the similarities and diversities in organizational structures of HEIs around the world.

The following table summarizes the nature of organizational structures in HEIs.

Table 1. Nature of Organizational Structures in HEIs.

Name of the University	Type of Organizational Structure	Governance	Layers of Management	Institutional Imperatives
University A, Bahrain	Hierarchical	Board of Trustees	3 Layers	Accreditation and Quality Assurance, Planning and Development, Measurement and Evaluation, International Relation, Information and Documentation, Public Relation and Media
University B, Bahrain	Hierarchical	Board of Trustees	4 Layers	Quality Assurance and Accreditation, Marketing and Public Affairs, International Partnership, English Language, Faculty Development, Legal Affairs, Governance and Strategic Planning
University C, Australia	Flat	Board of Trustees	2 Layers	Enterprise and Engagement, Global Engagement, Collaboration and Partnerships, Strategy, Legal Services, Risk Management, Advancement, Reporting, Analysis, Data and Systems, Policy Management, External Relation
University D, Australia	Hierarchical	Board of Directors	3 Layers	Innovation and Strategic Initiatives, Partnership, Quality and Service Improvement, Strategy, Planning and Performance, Governance and Policy Analysis
University E, UK	Flat	Executive Board	3 Layers	Innovation, Industry Engagement, International and Advancement, Marketing and Communication, Strategic Planning and Performance, English Language and Foundation Studies, Assurance Services
University F, UK	Flat	Board of Trustees	3 Layers	Strategic Planning, Social Responsibility and Sustainability, Innovations, Legal Services, Internal Audit, Global,
University G, USA	Hierarchical	Board of Trustees	4 Layers	Public Relation, Accreditation and Institutional Effectiveness, Diversity, Inclusion and Strategic University Initiatives, International Education
University H, USA	Hierarchical	Board of Trustees	4 Layers	University Analytics and Institutional Research, Global Initiative, Inclusive Excellence and Diversity, Integrated Advising Analytics
University I, UAE	Hierarchical	Board of Trustees	3 Layers	Marketing and Communication, Institutional Effectiveness, Executive Education
University J, UAE	Hierarchical	Board of Trustees	3 Layers	Advancement, Sustainability, Academic Planning and Analysis, International Exchange, Strategic Communications and Marketing, Institutional Research and Analysis, Internal Audit, Executive and Professional Education

3.2 Remarks on the Sample Organizational Structures in HEIs

The organizational structure in HEIs exhibit some similarities and divergence as far as the type, layers of management and institutional imperatives are concerned. The detailed analysis of the structures show that HEIs are governed and managed by strong leadership with President or Chancellor or Vice Chancellor or Provost at the top supported by university council or academic senate or academic board. The second level of management is assigned to the vice president or pro vice chancellor or deputy vice chancellor. The next layer of management represents deans of colleges or the faculty. For flat organizational structure like in University E there exits ten positions at same level starting from vice chancellor and president to deputy and senior vice chancellor, pro vice chancellor to chief operating officer. Student affairs/ services, IT services, Human Resource, Academic Program management, Resources/facilities and infrastructure including library, financial services and budget, research and community engagement are common academic and administrative services provided by the HEIs reflected on organizational structure. Only the two universities of UK and one in Australia show flat organization structure implying decentralized decision making. The remaining seven universities depict

hierarchical organizational structure with a focus on bureaucracy and centralized decision making. However all the HEIs demonstrate 3 layers of management whether it is flat or hierarchical except the University B in Bahrain with 4 layers of management.

Except University H in USA and University C in Australia, quality assurance constitutes integral part of all the HEIs. Strategic planning and Institutional research and performance evaluation are the institutional imperatives of all the selected HEIs except University G, USA. International relation/ global engagement is prevalent in all the HEIs under consideration. Marketing and Public Relation also forms another common area of focus. Majority of the HEIs have recognized the need for sustainability and innovation reflecting on the organizational structure.

It can be inferred that the organizational structures differ in their reporting mechanism or to the nature of decision making. The analysis shows major administrative functions like quality assurance, strategic planning, international relation, innovation, performance evaluation are under the umbrella of President/ Vice Chancellor of few universities. Vice president academic affair is responsible for ensuring excellent education and deans of all the colleges directly report to him/her. Most of the HEIs depict the structure with vice president not only for academic affairs but also for operation, finance, facilities and infrastructure, IT, student affairs etc. Research and Community engagement comes either as deanship or as council or some HEIs manage the scholarly activities under the leadership of Vice president/ deputy vice chancellor research etc. The focus on institutional imperatives is influenced by the accreditation standards of the regulatory bodies and other requirements of the professional accreditation. This in turn dictates the organizational structure and decision making whether it is centralized or decentralized; whether it is bureaucracy or adhocracy.

3.3 Proposed Framework of Organizational Structure for HEIs to Enhance Performance

The researchers have designed the following framework for an effective organizational structure in HEI. Figure 1 represents the framework for appropriate organizational structure in HEIs. The choice is between centralized and decentralized decision making; between collegial and bureaucratic organizational structure or a combination. The HEIs need to make a balance between their approaches preferably a mix of centralized and decentralized depending on the context and strategic focus of the HEI. A mix between centralized yet collegial structure can ensure best result by assurance, collaboration and dynamics. Decentralized decision making in a flexible operational management can promote participative decision making but might lead to long cycle. Bureaucracy reflects rigidity but if it is combined with decentralization can encourage autonomy. Centralized decision making at times leads to precarious results but during contingency it leads to uninformed yet speedy strategic decision. Hence the HEIs should position themselves in a mix of structures to satisfy their strategic objectives.

Figure 1. Framework for Appropriate Organizational Structure in HEI.
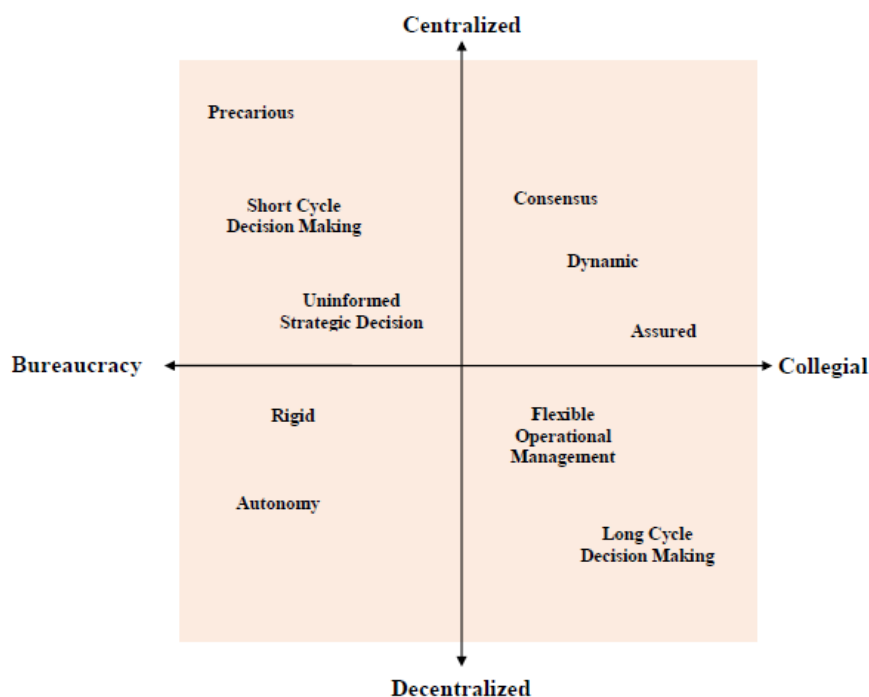
4. Conclusion

The transition in higher education sector amidst internationalization, marketization, and digitalization has influenced the organizational structure of 21st century HEIs. Given the constraints in infrastructure and resources, budget, staff and the challenges to secure the standards of the accreditation bodies the HEI has to take major decision in designing organizational structure. To meet the expectation of the stakeholders and requirements of the regulatory bodies HEIs have to consider whether to serve multiple administrative functions by dedicated units/centers/offices or by standing committees as part of the governance. The staff can contribute to achieve the strategic directions of the HEI through participative decision making in a collegial structure while avoiding excessive number of permanent positions in the hierarchy.

References

Duong, MQ. (2013). The Changing Needs for Higher Education Organizations Structure in Vietnam: Evidence from Japanese, Taiwanese and Thai Universities. Journal of Education and Learning. Vol. 7 (1) pp. 21-28

Eckel, D.P. & King, E. J (2004). An Overview of Higher Education in the United States: Diversity, Access and Role of Market Place. American Council on Education, pp 1 -25.

Lucenberg, Fred C. (2012). Organizational Structure: Mintzberg's Framework. International Journal of Scholarly, Academic, Intellectual Diversity, Vol 14, No. 1

Maduenyi Sylvia, Ajagbe, A. M. (2015). Impact of Organizational Structure on Organizational Performance. International Conference on African Development Issues (CU-ICADI)

Montana, P. & Charnov, B. (1993). Organizational Structures: Concepts and Formats. Management: A Streamlined Course for Business People, Hauppauge, New York: Barron's Business Review Series, pp 155-169

Scott, W.R. (2013). Organization Theory and Higher Education. Journal of Organization Theory in Higher Education, Stanford University

Shariffuddin, S., Razali, J., Ghani, M., Shaaidi, M., Ibrahim, I. (2017). Transformation of Higher Education Institutions in Malaysia: A Review, Journal of Global Business and Social Entrepreneurship (GBSE), Vol. 1: no. 2 (2017) page 126–136

Zziwa, A. B. (2014)."Does the organizational structure affect the management of universities in Uganda? An Empirical Analysis". International Journal of Educational Administration, Vol. 6(8), pp. 156-169.

INSTITUTIONALIZATION OF ACADEMIC STRATEGIES FOR THE RETENTION OF UNIVERSITY STUDENTS: PERCEPTIONS FROM CHILE

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Abstract

This work presents an exploratory review of the institutionalization processes of academic strategies designed and implemented for the retention of students within universities. In the context of the expansion and massification of higher education; universities have had to define a set of strategies to receive the non-traditional student. The identification of policies and critical actions is fundamental to the achievement of retention, as well as its implementation and monitoring, and finally, the modification of these to ensure that students persist in their educational courses and that there is retention, allowing the achievement of their academic objectives (Moxley et al., 2013).

The institutionalization in organizations is critical to sustaining the actions, strategies, and programs implemented. Since, practices and organizational forms survive and proliferate through a process of institutionalization, through which they become legitimate, when taking for granted regarding cognitive, cultural rationality, the government, in turn, orders them in a regulatory logic and professionals consider them appropriate regarding normative reasoning (Scott, 2001). For this purpose, an exploratory study was carried out in two Chilean universities, 24 interviews were conducted, which were processed and analyzed according to qualitative data analysis, using the Grounded Theory methodology in the NVivo 11 software.

As a conclusion, the institutionalization of the successful academic strategies developed to decrease the dropout and increase the retention of the students, with emphasis on those non-traditional students, is necessary to generate legitimacy and sustainability of their positive results over time.

This institutionalization goes beyond a decree or document because it involves more profound aspects, such as interfering with the structure and functioning of the organization, forming part of organizational learning.

It is evident to the university management teams that it is not possible to sustain all actions over time, due to the cost and the different impact that this implies. That is, not all initiatives are equivalent, and not all of them can be institutionalized. Therefore, a criterion defined by the institutions is to institutionalize those actions that have an essential impact on the retention of students, which are in line with the institutional strategic management system, thus maintaining a balance of cost-benefit.

Keywords: Academic strategies, non-traditional student, mass higher education, institutionalization.

1. Introduction

The expansion of the higher education can be observed in a variety of countries, such as the United States, Australia, Japan, Poland, Spain, Finland, and Chile, among others (Baker, 2015). This expansion, together with the overcrowding, has as its context the rapid economic development and globalization that led the population within the labor market and the need for labor with a greater knowledge and more technical skills, which implies the existence of a more significant number of people seeking higher education (Ratanawijitrasin, 2015). Indeed, mass higher education has allowed many more people to become university students by changing the composition of the student body (Abson and Williams, 2018).

During de last time, retention has become the first place as part of a relevant strategy, which should be developed and maintained so that the students can graduate successfully, as happens in Canadian universities (Cunningham, 2017). With the growth in the number of students, marked by the change from a system of the elite to one of masses, one which happens too in the developed countries,

becoming a frequent subject of transformations regarding structure, purpose, social and economic roles of the higher education (Schuetze and Slowey, 2002).

Concerning how to address the retention of university students, this has been changing over time. Initially, a large part of student retention was in charge of student affairs professionals, who sought to deliver the assistance they needed to continue within the university, which was seen in the first year programs established at the time, where the academic body was mostly absent. A large part of the retention activities was added instead of being integrated into the mainstream of institutional academic life. The retention activities at that time were considered as complementary to the existing university activities (Tinto, 2006).

A study conducted by Gilardi and Guglielmetti (2011) in the United Kingdom indicates the difference between traditional and non-traditional students, regarding interaction styles and their perception of quality of the experience. They found that non-traditional students can choose between two types of interaction. A first focused strongly on investing limited time in appropriate formal behavior, such as attending classes, and another style where the same amount of time is spent on developing relationships outside of the classroom and in the use of all available alternatives in the university environment.

Non-traditional students are the result of the process of expansion of higher education in modern industrial societies. Which has led to a more heterogeneous composition of students, regarding family, social and educational background, also regarding gender, age, life situation, life motivation and future occupational profile (Schuetze and Slowey, 2002). These students belong to equity groups, such as indigenous people from disadvantaged socio-economic sectors of society, and who have as an additional characteristic that of, studying part-time or have low academic scores for admission to higher education (Kahu and Nelson, 2018).

The institutions, to encourage the completion of university studies of the first-generation Latino students in accessing higher education in the United States, recognize and respond to needs by institutionalizing initiatives for these students, developing integrated support systems and fostering inclusive systems within the University campuses (Gil, 2016). Moreover, to keep students in higher education, there must be a range of support practices and strategies, that as an institution applies to a different groups of student in diverse situations. It is necessary to cross the resources with the needs of the students so that they can master their role as students and achieve academic success performance (Moxley et al., 2013). In the case of Chile, the massification of higher education has brought with it the incorporation of students from the working classes, due to the changes in society, since intellectual work has become an option for social mobility (Fleet and Concha, 2017).

The universities must define strategic objectives, to establish a set of resources necessary to support qualitative changes in the educational system (Stukalina, 2015). This way, the identification of strategies and critical actions is essential for the achievement of retention, as well as the implementation and monitoring of established strategies and, finally, their adjustment so that students can remain in the university making possible the compliance with academic objectives. The essence of retention lies in the ability to offer a help process centered on the student, where each of them feels the need or desire for this type of support (Moliek et al., 2013).

An aspect to consider is to know why students leave and it is another thing to know what the institution can do to help students stay and be successful (Tinto, 2006). Consequently, the growth of mass higher education has challenged this way of elite selectivity and can be linked to an increase in demands for higher education, not only to incorporate more students but to deliver instruction in adequate skills (Williams and Abson, 2018).

According to Moliek et al. (2013) within the strategies defined by an institution to ensure the retention of its students, it is possible to find five forms of support practices for the retention:

- Emotional support, where it is recognized that entering higher education is a stressful situation and causes considerable anxiety.
- Informational support: a program that assumes that students may not be understanding the demands that higher education implies for them, in addition to providing useful information about the campus.
- Instrumental support: the student can receive practical assistance to solve an educational challenge or problem that they face.
- Material support: substantial financial assistance that supports their participation in higher education.
- Identity support: recognizes the importance of helping students strengthen their identities and link to persistence in higher education with the support of staff and other students in a similar situation.

Tinto (2006) highlights the importance of knowing more about how it is that some programs for the retention of students can last over time in the center of the life of the institution and are institutionalized while others remain isolated.

The importance of the institutionalization of the programs lies in the fact that this is the process by which the actions are routinized, incorporating individual and group learning in systems, structures and procedures at the organization level (Argyris and Schön 1978).

The different views of the authorities and academics regarding organizational learning are not immeasurable, but it is possible that they complicate the exchange of knowledge between these two groups (Dee, 2017). Institutionalization within an organization is not a simple issue.

The institutionalization of organizational knowledge beyond the group becomes difficult in those organizations where there are groups with conflicts of interest (Berends and Lammers, 2010).

Therefore, the objective of this paper is to present an approach to the institutionalization of academic strategies designed and implemented for the retention of students within the university.

2. Methodology

The methodology used is qualitative and exploratory using the perspective of Grounded Theory (Strauss and Corbin, 2002), where the collection, processing, and analysis are closely linked.

A total of 24 members from 2 Chilean universities, one state and one private, were interviewed. Three experts in the field of higher education were also interviewed to complement the information and reduce the bias that might have been generated at the time of the interviews. The same interview guide was applied to them, where perceptions regarding the characteristics of university students are addressed, with emphasis on those belonging to the non-traditional student profile, the academic strategies developed and their impact on academic results. All the participants, prior to the start of the interview, were given an informed consent, in accordance with what was established by the ethics committees. To diminish the bias that comes from the investigators and that could interfere in the interpretation of the data, a review of the results was carried out by the investigative peers as well as the interviews with the experts.

The sampling used was the selective one, to choose the universities and the theoretical one for the selection of the individuals. The information was processed using the NVivo software, where the open, axial and selective coding process was carried out.

3. Results

The results obtained from the methodology mentioned above show the concepts that emerged as a result of open, axial coding and the first approach to selective coding. The core category of New student profile, support strategies were identified

In this sense, the categories of New student profile, Support strategies, Institutionalization, strategic plan, institutional policies, and impact were identified.

Figure 1. Analysis diagram.
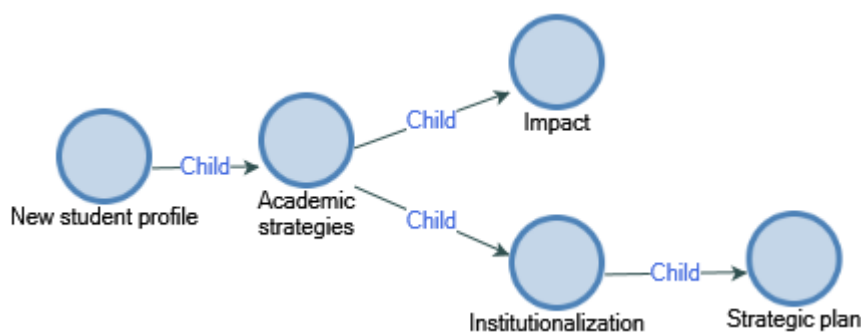
As a relation to the new profile of students, it can be established that:
"The students who arrive at the University are mainly the first three quintiles [lower socioeconomic groups] Many of them are the first generation who enter the university" (E23).
"When they see that they have difficulties, they tend to drop out" (E17).

Concerning academic strategies for support, these consist of leveling activities, tutoring, as reflected below:

"Those students, for example, who perform under 30% are required to attend leveling activities" (E14).

"The tutor's program focuses precisely on their work in the first semester" (E17).

A relevant element is to evaluate and monitor the impact that the support programs have at the interior of the institution, in the programs of support that define, due not only to the cost involved but also the performance of each one which can differ.

"I think that the one that has had the best result is the Modular one [modularization of courses], in physics as in mathematics. For me the modular ones are those that have produced a significant change in the students, one because themselves say so, that they have learned to study" (E2).

"The tutorials, in a certain way, work. They work and deliver what the students need for the first year in the University" (E4).

The impact is crucial to determine what practices, programs or strategies should be institutionalized within the university, as occurs for example with two strategies identified as key, the tutor's program and the modularization of basic science courses.

"The tutor's program and modularization of subjects are institutional, are for all students, have curricular initiation, do not segregate students and are focused on the axis that is learning" (E20).

"The necessary strategies of retention, because this is all retention, that is, we do it because we are good, but not because we are so good, but because we want to improve our indicators and we are interested in the student who arrives here" (E22).

This institutionalization of the strategies materializes itself through the inclusion of the strategic management system of the institution.

"Tutors Program that is part of the Strategic Plan" (E21)

"[the academic strategies] are contemplated within the Plan and are included in the university budget" (E19)

The results show the existence of academic strategies designed for students entering university today, with emphasis on those characterized as a new student profile, corresponding to the concept of the non-traditional student.

The new profile of students who access higher education is not prepared to face not only the academic requirements but also the university life. This situation implies a series of challenges that universities must face today, since the retention of students has become a critical aspect, not only within institutions but also at a political level. Because there is evidence that the transition to university is more complicated for non-traditional students, who tend to drop out (Araneda-Guirriman et al., 2017).

In this way, the strategies identified to respond to diversity in universities, where student-centered approaches are required for retention (Moxley et al., 2013).

For these strategies to achieve the purpose of retention, their impact must be considered. Therefore, in this context, university authorities consider organizational learning as a mechanism to improve efficiency and institutional efficiency, while on the other hand academics can link organizational learning with opportunities to seek new ideas and experiment with innovative practices (Dee, 2017).

4. Conclusion

The Chilean higher education system has changed in recent years, within which is the massification and expansion of higher education. This situation has led to the diversification of its population of university students, presenting a new profile of students.

This new profile of students corresponds to what literature considers as a non-traditional student, characterized as being the first generation to access higher education and to come from the disadvantaged sectors of society.

The present context has implied a series of challenges for the universities, which have had to develop strategies, practices, and programs for their retention, considering for this end the impact that will have certain actions on the academic results. In effect, not all strategies, practices and programs are equally successful or have the same impact. Therefore, the institutionalization of these academic strategies is associated with their impact. It should be noted that the process of institutionalization is fundamental for the sustainability and future projection of the positive academic results of students, and retention.

Acknowledgments

References

Abson, J., & Williams, J. (2018). Mass Higher Education: The Construction of Difference. In *Identity and Difference in Higher Education: Outsiders within* (pp. 11-27). Routledge.

Araneda-Guirriman, C., Pedraja-Rejas, L., & Rodríguez-Ponce, E. (2017). Desafíos de la educación superior en el contexto de la masificación: un análisis conceptual desde el habitus institucional. *Revista ESPACIOS*, *38*(60)

Argyris, C., & Schön, D. A. (1978). Organizational Learning, Readings. *MA: Addison-Wesley*, *344*.

Baker, D. (2015). Mass higher education and the super research university. *International Higher Education*, (49).

Berends, H., & Lammers, I. (2010). Explaining discontinuity in organizational learning: A process analysis. *Organization Studies*, *31*, 1045-1068

Cunningham, T. L. (2017). Increasing Success: Strategies to Address Factors Affecting Student Retention from First to Second Year at a Canadian, Undergraduate, Liberal Arts University

Dee, J., & Leisyte, L. (2017). Knowledge sharing and organizational change in higher education. *The Learning Organization*, *24*, 355-365.

Fleet, N., and Guzmán- Concha, C. (2017). Mass Higher Education and the 2011 Student Movement in Chile: Material and Ideological Implications. *Bulletin of Latin American Research*, 36, 160-176.

Gil, E. (2016). First-Generation Latino College Students: Institutional Practices that Support Four-Year College Degree Completion. *Urban Education Research & Policy Annuals*, *4*(2).

Gilardi, S., & Guglielmetti, C. (2011). University Life of Non-Traditional Students: Engagement Styles and Impact on Attrition. *The Journal of Higher Education*, *82*, 33-53.

Kahu, E. R., & Nelson, K. (2018). Student engagement in the educational interface: understanding the mechanisms of student success. *Higher Education Research & Development*, 37, 58-71.

Moxley, D., Najor-Durack, A., & Dumbrigue, C. (2013). *Keeping students in higher education: Successful practices and strategies for retention*. Routledge.

Ratanawijitrasin, S. (2015). The evolving landscape of South-East Asian higher education and the challenges of governance. In *The European Higher Education Area* (pp. 221-238). Springer, Cham.

Schuetze, H. G., & Slowey, M. (2002). Participation and exclusion: A comparative analysis of non-traditional students and lifelong learners in higher education. *Higher education*, *44*, 309-327

Scott, W. R. (2001). Instituitions and organizations. *Thousande Oakes: Sage*.

Strauss, A. L., & Corbin, J. (2002). *Bases de la investigación cualitativa: técnicas y procedimientos para desarrollar la teoría fundamentada* (p. 341). Medellín: Universidad de Antioquia

Tinto, V. (2006). Research and practice of student retention: What next?. *Journal of College Student Retention: Research, Theory & Practice*, *8*, 1-19.

Stukalina, Y. (2015). Management of higher education institutions: Searching for the ways to gain competitive advantage. *Economics and Culture*, *12*, 87-98.

INVESTIGATING EFL UNIVERSITY STUDENTS' WRITING PERCEPTIONS VIA IMPLEMENTING PROCESS/GENRE APPROACH IN A BLOG-BASED CLASSROOM

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Abstract

This study was to explore EFL students' perceptions toward blog writing and to investigate if there were any relationships in terms of blog writing in a process/genre approach (PGA) writing classroom, which was conducted at a university in central Taiwan. The PGA is relatively new, and related research application has also been scarcely used in comparison to other approaches. Moreover, studies relating to the integration of blog in PGA-based writing classrooms are rarely found. In order to bridge the research gap, a total of eighteen English majors participated in this pioneering mixed-method quasi-experimental study. A questionnaire regarding blog writing, which was cautiously developed and tested by a series of validity and reliability tests, was used to contribute to quantitative data, while semi-structured interviews whose questions were also reviewed by qualitative research methods served qualitative outcomes.

After the data analysis, the quantitative research showed that the students' perception of blog enhanced writing was significantly correlated with blog for socialisation and attitudes toward blog writing after the treatments. The qualitative data demonstrated that there were both advantages and disadvantages when the blog was applied in the EFL writing classroom; however, the features of retrieving more writing samples and online resources, sharing writing samples with others, and receiving and giving feedback to each other have been vastly emphasised by the interview subjects.

It was therefore concluded that the use of blog in the PGA writing classroom improved the EFL students' writing abilities greatly in both direct and indirectly aspects. In terms of the direct dimension, the students were allowed to read others' work, share personal writing samples, retrieve online information, and give comments and feedback and therefore their senses of authorship and readership were possibly developed during the process. Their perception toward writing for socialisation and interaction might be also established simultaneously. As for the indirect perspective, both the students' attitudes and affections could be improved through blogging because they had more interactive and communicative opportunities with others, which helped them learn collaboratively. Consequently, the students would understand that writing could be an interactive process, and it is not merely an individual assignment completion, which was very likely to increase their writing motivations and interests.

Keywords: Students' perceptions, correlations, blog writing, process/genre approach.

1. Introduction and background of the study

Writing has long been considered as the most difficult task for EFL learners, and it has usually been completed individually in which students are in short of interactive and communicative opportunities with their peers. According to Vygotsky, however, "learning is a relational activity, not an individual process of thought" (Elkjaer, 2006, 21), and therefore, language learning should involve having social interactions and cooperating or interacting with others and with more competent language users (Oxford, 1990). In order to compensate the difficulty of interaction and communication in a traditional EFL writing classroom, blog was therefore utilised as the teaching and learning platform in this study. In a blog-based writing classroom, students are allowed to write collaboratively (Normand-Marconnet & Cordella, 2012; Silviyanti & Yusuf, 2014; Warschauer & Liaw, 2011), retrieve required information online conveniently, or read others' writing samples and share comments with others (Chen, Liu, Shih, Wu, & Yuan, 2011). To successfully adapt the students to the affordance of blogging, the process/genre approach (PGA) was therefore infused into the classroom. Badger and White (2000) claimed that PGA helps learners use writing skills (process approach) and realise more linguistic knowledge as well as writing purposes (genre approach). In the writing classroom of this kind, interacting with peers is required, so the students could obtain more communicative opportunities with others in a blogosphere. Not only did

the writing platform emphasise the importance of communication, but the writing approach also create a great interactive learning milieu for the students in this study. However, the PGA is relatively new, and related research application has also been scarcely used in comparison to other approaches. Also, studies relating to the integration of blog in PGA-based writing classrooms are rarely found, so this study was conducted to fill up the research gap.

Therefore, the purpose of this study was to explore EFL university students' perceptions toward blog writing and to investigate if there were any relationships in terms of blog writing in a PGA writing classroom. In order to provide a sound picture regarding the issue, both quantitative and qualitative research methods were adopted, which included the affordance of a questionnaire and the implementation of semi-structured interviews. Based on the aforementioned statements, the major research questions of this study were:

(1) In terms of the qualitative point of view, how did the Taiwanese university students perceive the use of blogs in an EFL writing classroom?

(2) In terms of the quantitative point of view, were there any statistical relationships in an EFL university blogging classroom?

1.1. Blogs in EFL writing classrooms

Blog could be a potential instructional alternative in EFL writing classrooms because students' writing abilities are likely to be developed in a collaborative manner in a blogosphere (Normand-Marconnet & Cordella, 2012; Silviyanti & Yusuf, 2014; Warschauer & Liaw, 2011). The affordance of blogs in EFL writings classrooms are beneficial to both instructors and learners. For example, both teachers and students are able to retrieve writing samples, receive or give feedback, and upload any supplementary and auxiliary materials without there being restrictions of time and places (Armstrong & Retterer, 2008; Campbell, 2005; Torut, 2000), and therefore the instruction is not confined to a classroom setting, since instructors and learners can have contact with each other whenever and wherever necessary (Arslan & Şahin-Kızıl, 2010). In addition to improve one's writing competence directly, blog writing also diminishes one's writing anxiety (Lin et al., 2014), and students' positive attitudes might be enhanced (Aljumah, 2012) because students might have lower levels of pressure and anxiety when writing on blogs, which also developed their English writing motivations and confidence. Unfortunately, Aljumah (2012) and Habul-Šabanović (2015) suggested that more studies related to the application of blogs in education were needed because they have not been widely and practically utilised in the field.

1.2. Process/genre approach in EFL writing classrooms

It is to be understood that every approach has its advantages and disadvantages (Tuffs, 1993). The PGA is developed based on the process approach (PCA) and genre approach (GRA) in which the former emphasises learners' creativity and effectiveness (Maybin, 1994) whilst the latter is controlled by instructors (Hyland, 2007). The two approaches compensate each other's weaknesses because the PCA enhances students' learning and offers learning opportunities through their writing process, and the GRA helps them understand the language knowledge that they need to develop their writing samples in a specific genre (Maybin, 1994). Therefore, the creation of the PGA make students understand the writing processes and purposes for certain genres. Badger and White (2000) claimed that PGA helps learners use writing skills (process approach) and realise more linguistic knowledge as well as writing purposes (genre approach). However, PGA is relatively new in the field, and its related research has also been scarcely used in comparison to other approaches; therefore, this study was conducted to investigate its effectiveness on EFL university students' writing performance.

2. Research Method

2.1 Participants

A total of eighteen English-major sophomores in an intact class from a university in central Taiwan participated in this study. The researchers claimed that their English proficiency was similar because they needed to take an entrance exam organised by the Testing Centre for Technological and vocational Education before being admitted to the university, and also they received very similar instruction in English afterwards.

2.2. Research instruments

The research instruments in this study were inclusive of a questionnaire and semi-structured interviews. Both research instruments were piloted cautiously to make sure the validity and reliability

before they were formally applied in this study. The questionnaire which included five dimensions (blog vs. paper pencil writing, blog enhanced writing, blog for socialisation, attitudes toward blog writing, and affections toward blog writing) was used to understand the participants' perceptions toward the use of blog in their writing classroom, and the semi-structured interviews were conducted to collect more in-depth data in order to explain how the students perceive the integration of blog and the PGA.

2.3. Data collection and analysis

This study lasted ten weeks including the pre-test and post-test. In the first week, the questionnaire regarding the students' perceptions toward blog writing was distributed, which served as the pre-test, and then the introduction of how to use the blog was carried out briefly in order to make sure the participants understood how to use it and to avoid hassles during the process. Then, eight-week experimental instruction was implemented in which two different writing samples were completed on the blogs in a PGA-based writing classroom. Finally, the questionnaire used in the first week was adopted again to collect data in the post-test followed by the semi-structured interviews.

The quantitative data collected from the questionnaire was analysed by the Spearman's correlation coefficient to investigate if there existed any statistical significant correlations in terms of the use of blog in this study context, and the qualitative interview data was assayed to explain the quantitative outcomes in a more in-depth manner.

3. Results and discussions

To answer the research questions proposed in this study, both quantitative and qualitative data was analysed and reported to give deliberative illustrations.

According to the interview consequences, it was found that the students' writing competence could be developed directly and indirectly. In the direct aspect, the students were allowed to read others' work, share personal writing samples, retrieve online information, and give comments and feedback and therefore their senses of authorship and readership were possibly developed during the process. Their perception toward writing for socialization and interaction might be also established simultaneously. As for the indirect perspective, both the students' attitudes could be improved through blogging because they had more interactive and communicative opportunities with others, which helped them learn collaboratively.

Table 1 demonstrates the quantitative results extracted from the Spearman's correlation coefficient. After the data analysis, it was found that the students' blog enhanced writing was significantly correlated with blog for socialisation and attitudes toward blog writing after the treatments.

Table 1. Spearman's correlation coefficient in the adopted questionnaire.

Spearman's rho	Blog vs. Paper-Pencil Writing	Blog Enhanced Writing	Blog for Socialisation	Attitudes toward Blog Writing	Affections toward Blog Writing
Blog vs. Paper-Pencil Writing					
Correlation Coefficient	1.000	.395	.305	.341	.234
Sig. (2-tailed)	.	.105	.219	.166	.350
N	18	18	18	18	18
Blog Enhanced Writing					
Correlation Coefficient		1.000	.770**	.634**	.256
Sig. (2-tailed)		.	.000	.005	.305
N		18	18	18	18
Blog for Socialisation					
Correlation Coefficient			1.000	.387	.407
Sig. (2-tailed)			.	.112	.094
N			18	18	18
Attitudes toward Blog Writing					
Correlation Coefficient				1.000	.153
Sig. (2-tailed)				.	.545
N				18	18
Affections toward Blog Writing					
Correlation Coefficient					1.000
Sig. (2-tailed)					.
N					18

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

To explain the statistical significance between blog enhanced writing and blog for socialisation, it was asserted that students' interacting on the blogs might better understand their writing task because the students had vast opportunities to read others' work, share personal writing samples, and give comments and feedback based on what had been discovered from the interviews. One of the interview subjects indicated that reading peers' blogs helped them learn something that they did not know, and another interview subject mentioned that they were able to collect different points of view when reading others' work on the blogs. These findings confirmed what have been found in Noytim's (2010) and Silviyanti and Yusuf's (2014) studies. This study therefore proved that EFL university students' writing abilities could be improved through the ways of interaction and communication.

As for the relationship between blog enhanced writing and attitudes toward blog writing, since the participants did not have any blog writing experience in EFL classrooms before taking part in this research, they found this convenient, interesting, and easy. They also mentioned that they were allowed to submit their writing assignments easily by using their computers, laptops, or even smartphones. This also confirmed Lin's et al. (2013) research findings of the convenience of blogging. Also, blogging provided them with a communicative and interactive way of writing, so they would perceive that they were writing collaboratively for communication, rather than writing individually for assignments, which might improve their attitudes toward blogging. This research consequence is also in line with Lin's et al. (2014), Noytim's (2010), Silviyanti and Yusuf's (2014), and Sun's (2010) conclusions.

In summary, this study figured out that there were statistical relationships among blog enhanced writing, blog for socialisation, and attitudes toward blog writing in a PGA writing classroom. As mentioned earlier, both the PGA and blogging emphasise the significance of communication and interaction, so the participants had a lot of opportunities to understand how others constructed their writing samples, how to give feedback to each other, or how to revise their writing samples according to the given comments and the like in a writing classroom of this kind; as a result, their writing ability might be enhanced whilst their writing attitudes were developed.

However, it could not be denied that there also maintained some disadvantages when applying this instruction in an EFL writing classroom. For example, students' creativity and imagination might be deprived because they had a multitude of writing samples to refer and therefore their own ideas could be influenced. One of the interview subjects proposed that her writing samples were quite similar to others' as well. Also, some argued that they spent much more time on their writing tasks because they needed to read others' work and give feedback before writing their own. Furthermore, the students tended to be reticent and even silent in the writing classroom, which is a general phenomenon in Asian educational context (Szanajda & Chang, 2015).

In order to successfully implement the teaching method in a writing classroom, both instructor and learners should realise what they are going to do and how they are going to do it to increase the instructional effectiveness.

4. Conclusion

Although blog itself is not a new technology, but it also has its advantages and values to be used in education nowadays. For example, it allows users to connect to others asynchronously which largely increases the convenience for the users. From the research results mentioned above, the EFL university students' perceptions toward blogging remained fresh and new which implies that blog still has not been sufficiently utilised in the current educational system. Therefore, it is hoping that both blogs and PGA could be practically adopted in the classrooms to improve EFL university students' writing motivations and attitudes, and more related research to confirm its effectiveness is also awaited. Finally, Figure 1 summarises that EFL university students' writing motivations and confidence would be possibly increased whilst both direct and indirect dimensions involved in their writing process, which could be nurtured by blogging in a PGA classroom.

Figure 1. The effect of blogs in PGA writing classrooms.
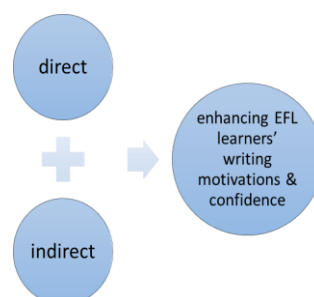
References

Aljumah, F. H. (2012). Saudi learner perceptions and attitudes towards the use of blogs in teaching English writing course for EFL majors at Qassim University. *English Language Teaching, 5*(1), 100-116.

Armstrong, K., & Retterer, O. (2008). Blogging as L2 writing: A case study. *Association for the Advancement of Computing In Education Journal, 16*(3), 233-251.

Arslan, R. Ş., & Şahin-Kızıl, A. (2010). How can the use of blog software facilitate the writing process of English language learners? *Computer Assisted Language Learning, 23*(3), 183-197.

Badger, R., & White, G. (2000). A process genre approach to teaching writing. *ELT Journal, 54*(2), 153-160.

Campbell, A. (2005). Weblog applications for EFL/ESL classroom blogging: A comparative review. *The Electronic Journal for English as a Second Language, 9*(3).

Chen, Y. L., Liu, E. Z. F., Shih, R. C., Wu, C. T., & Yuan, S. M. (2011). Use of peer feedback to enhance elementary students' writing through blogging. *British Journal of Educational Technology, 42*(1), E1-E4.

Elkjaer, B. (2006). Social learning theory: Learning as participation in social processes. In M. Easterby-Smith & M. A. Lyles (Eds.), *Handbook of organizational learning and knowledge management*. Chichester, UK: Blackwell Publishing.

Habul-Šabanović, I. (2015). Using blogs to promote student interaction and learning in EFL classes. *Journal of Transdisciplinary Studies, 8*(2), 9-22.

Hyland, K. (2007). Genre pedagogy: Language, literacy and L2 writing instruction. *Journal of Second Language Writing, 16*(3), 148-164.

Lin, M. H., Groom, N., & Lin, C. Y. (2013). Blog-assisted learning in the ESL writing classroom: A phenomenological analysis. *Educational Technology & Society, 16*(3), 130-139.

Lin, M. H., Li, J. J., Hung, P. Y., & Huang, H. W. (2014). Blogging a journal: Changing students' writing skills and perceptions. *ELT Journal, 68*(4), 422-431.

Maybin, J. (1994). Teaching writing: Process or genre? In S. Brindley (Ed.), *Teaching English* (pp. 186-194). London: Routledge.

Normand-Marconnet, N., & Cordella, M. (2012). Spanish and French foreign learners' blogging experience: Motivation and attitude. *The JALT CALL Journal, 8*(1), 3-16.

Noytim, U. (2010). Weblogs enhancing EFL students' English language learning. *Procedia Social and Behavioral Sciences, 2*, 1127-1132.

Oxford, R. (1990). *Language learning strategies: What every teacher should know*. New York: Newbury House.

Silviyanti, T. M., & Yusuf, Y. Q. (2014). A one-stop class blog to promote collaborative writing activities. *Malaysian Journal of ELT Research, 10*(1), 31-45.

Sun, Y. C. (2010). Extensive writing in foreign-language classrooms: A blogging approach. *Innovations in Education and Teaching International, 47*(3), 327-339.

Szanajda, A., & Chang, W. Y. (2015). Encouraging student engagement in ESL writing classes in Asian classrooms: Recommendations for actions to be taken. *Journal of Linguistics and Language Teaching, 6*(2), 259-274.

Torut, B. (2000). Computer-assisted language learning: An overview. *Silpakorn University International Journal, 1*(1), 130-153.

Tuffs, R. (1993). A genre approach to writing in the second language classroom: The use of direct mail letters. Revue belge de philologie et d'histoire, 699-718.

Warschauer, M., & Liaw, M. L. (2011). Emerging technologies for autonomous language learning. Studies in Self-Access Learning Journal, 2(3), 107-118.

VALIDATION OF PRIOR LEARNING IN THE HUNGARIAN HIGHER EDUCATION SYSTEM

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Abstract

The validation of non-formal learning has been in the focus of European discourse in the last decades. As the EU considers validation a policy priority, a Council Recommendation was made in 2012 in order that all Member States develop their national validation system by 2018.

The precondition of validation is that the output requirements of the qualifications should be described in learning outcomes and the qualifications should be classified in the National Qualifications Framework. An important reform was introduced in the Hungarian higher education system in 2015, and at the moment the higher education is the only field where the Hungarian National Qualifications Framework and the improvement of qualifications based on learning outcomes are to be legally applied.

The higher education qualifications were referenced to the Hungarian National Qualifications Framework in the summer of 2015 which classifies the output requirements of the qualifications into 8 levels and 4 categories (Knowledge, Skills, Attitude, Autonomy and responsibility).

The two-year higher education vocational qualification equals level 5 in the Hungarian National Qualifications Framework, while level 6 equals to a bachelor's degree, level 7 equals to a master's degree and level 8 corresponds to a doctoral degree. The restructuring of training and output requirements of the higher education qualifications based on learning outcomes began immediately after the classification process. The new system based on learning outcomes applies to the first-year students who are going to start their studies in the term of 2017/2018. This system must be applied as a phase-out system.

The requirements based on learning outcomes can significantly enhance the validation and recognition of competences (e.g. work experience) acquired through non-formal learning because the acquired competences can be compared with the learning outcomes of the qualifications easier.

The subject of our research is the higher education because Act CCIV of 2011 on National Higher Education offers the opportunity of validation of competences acquired through non-formal learning, but full qualification cannot be acquired only through validation.

The results presented are based on a field research. In our research we undertook to present and compare the recognition and practice of validation in the Hungarian higher education system. We examined the present validation practice of all Hungarian higher education institutions (namely 65) and conducted semi-structured interviews.

We compared the documents, decisions, procedures, costs, applied methodology, evaluation methods and information of the validation process of higher education institutions. The analysis revealed the common features of the validation process, such as the process of validation and the preparation of the portfolio.

After studying the current systems, we made a Problem Map so that we could evaluate the obstacles of the validation processes. After identifying the problems, we can outline concrete proposals and recommend tasks.

Our Problem Map also casts light upon the lack of applied methodology, the lack of relationship between the institutions, the lack of funding and demand.

The practical purpose and long-term goal of our research is to give information based on the results of our research and contribute to the development of the national system with our recommendations.

Keywords: Validation, higher education, non-formal learning, work experience, learning outcomes.

1. Introduction

The validation of non-formal learning has been in the focus of European discourse in the last decades. As the EU considers validation a policy priority, a Council Recommendation was made in 2012

in order that all Member States develop their national validation system by 2018 (The Council of the European Union, 2012).

So as to make the validation of learning outcomes acquired in non-formal learning context possible for all citizen in that countries.

The issue is crucial because Hungary has undertaken to develop its national validation system by 2018 based on the Council Recommendation of 2012.

The precondition of validation is that the output requirements of the qualifications should be described in learning outcomes and the qualifications should be classified in the National Qualifications Framework.

„Learning outcomes means statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competences" (The Council of the European Union, 2012:20. p.).

„Confirmation by a competent body that learning outcomes (knowledge, skills and/or competences) acquired by an individual in a formal, non-formal or informal setting have been assessed against predefined criteria and are compliant with the requirements of a validation standard. Validation typically leads to certification."(Cedefop, 2008:199. p.).

An important reform was introduced in the Hungarian higher education system in 2015 and at the moment the higher education is the only field where the Hungarian National Qualifications Framework and learning outcomes -based education development are to be legally applied.

In the summer of 2015 the higher education qualifications were listed in the Hungarian National Qualifications Framework which classifies the output requirements of the qualifications into 8 levels and 4 categories (Knowledge, Skills, Attitude, Autonomy and responsibility).

The two-year higher education vocational qualification equals level 5 in the Hungarian National Qualifications Framework, while level 6 equals a bachelor's degree, level 7 equals a master's degree and level 8 is equivalent to a doctoral degree. The restructuring of training and output requirements of the higher education qualifications based on learning outcomes began immediately after the classification process. The new system based on learning outcomes is applied to the first-year students who started their studies in the term of 2017/2018. This system must be applied as a phase-out system.

2. Objectives

The requirements based on learning outcomes can significantly enhance the validation and recognition of competences (e.g. work experience) acquired through non-formal learning because the acquired competences can be compared to the learning outcomes of the qualifications easier. Because work experience is structured differently than the curriculum requirement. The learning outcomes are a common language that all can understand and help compliance, because they characterize the possessed knowledge acting competences.

The subject of our research is the higher education because Act CCIV of 2011 on National Higher Education offers the opportunity of recognition of competences achieved through non-formal learning, but full qualification can be acquired only through validation. Systematic validation has not yet been established in Hungary, but good practices exist in the higher education sector.

The results presented are based on a field research. In our research we undertook to present and compare the recognition and practice of validation in the Hungarian higher education system. We examined the present validation practice of all Hungarian higher education institutions (namely 65) and conducted semi-structured interviews.

We compared the documents, resolutions, procedures, costs, applied methodology, evaluation methods and information of the validation process of higher education institutions.

Before starting our research we assumed that the analysis reveals the common features of the validation process, such as the process of validation and the preparation of the portfolio.

One of our objectives was to make, a Problem Map after studying the current systems so that we can evaluate the obstacles of the validation processes. After identifying the problems, we can outline concrete proposals and recommend tasks.

3. Methods

In our research we made document analysis of the Study and Examination Regulations- in Hungarian "Tanulmányi és Vizsga Szabályzat" (TVSZ) -of the state and the non-state higher education institutions and a semi-structured interview with the most competent person of each higher education institution about the validation.

The interviewees were open and cooperative, when we asked them. The interviews took 30-60 minutes. We recorded the interviews with a dictaphone. All interviewees agreed to record the conversations with the dictaphone.

Our questions were mainly focused on the development of the system, the process, the used methods and their application in practice.

We processed the answers with content analysis and comparative analysis.

Sample:

We examineted the TVSZ of 65 universities and higher education institutions (28 state institutions and 37 non state institutions).

Furthermore, we went to institutions, where the validation is applied in practice and made interviews with the most competent people.

4. Discussion

4.1. Document analysis

According to Act CCIV of 2011 on National Higher Education 49. § (7) the higher education institutions have to regulate the validation in the TVSZ documents.

The TVSZ must be accessible to everyone.

After studying the TVSZ's we have classified the higher education institutions into 3 groups depending on the text of the TVSZ.

We did not find any information about validation in the TVSZ at 20 institutions, 39 institutions quoted the statute in the TVSZ. Finally we have found 3 positive instances: in these institutions regulation beyond legal requirements can be found in the TVSZ's.

But, there are 3 non state institutions, where we could not read this document.

Table 1. Validation in the TVSZ (self-edited).

Validation in the TVSZ	non-state higher education institution	state higher education institution
No information	13	7
Quoted statute (work experience can be validated for a maximum of 30 credits + 1/3 of the credit value of the training is to be completed at the institution	21	18
Regulation beyond legal requirements	0	3

4.2. Content analysis

After analising the interviews, we have summarized the results in the following tables.

We have made a comparison between the higher education institutions for different aspects.

Summary:

- There is a similarity in the initiation of proceedings and documenting.
- The most commonly used methods to prove the knowledge is the portfolio or some kind of documents showing work experience, job description, employment verification. Information, advice and guidance systems are not developed. But information system would be very important.
- The examination is typically carried out by the instructor of the course or the expert of the chosen area.
- The charges of the validation process are different depending on the higher education institutions.
- Attitude of the teachers are very different.

Table 2. Content analysis (self-edited).

Aspects	Results
Possibility of validation	Master, every subject or practical work requirements can be selected
Deadline	the beginning of the semester
Validation tools and methods	portfolio (list of studies, Europass CV, list of competences, presentations) or/and some kind of documents showing work experience, job description, employment verification
Information, advice and guidance	partially formed
Investigator	the teachers or experts of the chosen area
Valuation	oral portfolio defense or written exam
Documentation of the procedure	resolution
Expenses	700 Ft/ credit or free
Attitude (teachers and students)	various
Participants	professionals with several years of work experience
Types of courses	practical

According to the answers of the interviewees, there are inhibitory factors. We can group these factors into the following groups:

Problems:
➢ general social problems
➢ legislative problems
➢ internal regulatory problems
➢ management problems
➢ organization of work problems
➢ HR problems
➢ communicational problems
➢ information flow problems
➢ financial problems

In the Problem Maps we summarize problems to be resolved related to the validation of learning outcomes acquired in non-formal learning context in the higher education system.
Our Problem Map also casts light upon the lack of applied methodology, the lack of relations between the institutions and the lack of funding and demand.

Table 3. Problem Maps (self-edited).

Areas	Problems
general, social	General ignorance of the validation system Lack of confidence, formal education opportunities and learning have high prestige, there is no confidence in knowledge acquired through non-formal way
legislative	There is no significant commitment on the state level by the government Not regulated if the higher education institution does not regulate the issue of validation
internal control	Higher education institutions have not established their own validation procedures Lack of a unified quality approach
management	Lack of positive teachers attitude, because they are not interested Representation of the student interests is missing
organization of work	There is no staff member status within the institution for validation Education organization is very difficult, it is hard to launch every course
HR	Lack of validation specialist within the institution
communication	Lack of dialogue between the institutions
information flow	There is not enough information on the validation option for the students
finance	Educators, professionals, consultants who are involved in the validation process are not paid for that The institution has no interest in validation, because their revenue declines and the procedure fee paid by the students does not stay at the intitution

5. Conclusions

The problems are manifold and have an influence on the operation of the system. We wrote suggestions for problem solving.

Suggestions:
- General information about validation system (for the society too), in order to build trust.
- The government must commit to validation.
- Legislation so that the higher education institutions have to make self validation system.
- Employment of validation experts in higher education institutions with clear determination of assignment and responsibility.
- Development of dialogue between higher education institutions to share experiences.
- Informing students through several forums (both personal and online).
- Involvement of teachers, professionals and consultants in the validation process both professionally and financially
- Knowledge transfer of validation, providing further training opportunities
- Rethinking of the financing system

The practical purpose and long-term goal of our research is to give information based on its results and contribute to the development of the national system with our recommendations.

References

Cedefop (2008): *Terminology of European education and training policy*, 199.
The Council of the European Union (2012): *Conuncil Recommendation of 20 December 2012 on the validation of non-formal and informal learning*
http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32012H1222(01)&from=HU (2018.01.25.)
2011. évi CCIV. törvény a nemzeti felsőoktatásról - Act CCIV of 2011 on National Higher Education
the Study and Examination Regulations (the state and the non-state higher education institutions)

QUESTIONS CHILDREN ASK

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Abstract

The purpose of this research project is to investigate the types of questions young children ask and analyzed them using Bloom's Taxonomy. The qualitative method based on collecting data from observation of sixty -three preschool children in the Midwest of the USA for six months and writing down questions that the children asked each other and the teachers. The results demonstrated that children asked teachers practical questions for help, understanding or evaluation. Children ask each other question for analysis, synthesis, and creativity. The observation of children play also revealed that children in play used rather statements and commands than questions.

Keywords: Questions, young children.

1.Introduction

One way of trying to discover the world is to ask many questions. Much of what children learn is based on information acquired through the testimony of others. (Milles et al.,2011) Observations of children demonstrate their understanding of the world (Nowak-Fabrykowski, 2013) as expressed by symbolizing their knowledge though play. Around 2-years of age children start symbolizing things by actions and words (Piaget, 1979). They discover concepts by playing, investigating, and exploring objects and ideas. Children have always something in mind; have always something to talk about; something to say, a though to express. (Dewey,2007) According to Miles et al. (2011) the ability to ask questions is a complex cognitive process that involves at least three steps: determining the appropriate informant to question, deciding how to use questions as a tool to acquire information related to the problem at hand, and determining how to apply the information received to solve the problem.

The type of questions that children are exposed to from the adults also determine the questions they ask. For example, the research on literal and inferential questions and children's responses during whole-class shared reading conducted by Zucker (2010) demonstrated that the inferential teacher questions encourage inferential child responses. Also, according to Ensley (1975), answering young children's questions determines of their subsequent question-asking. Questions make up one fifth of a child's language activity at ages 3 through 8 (Warren, 1979) and the child's age also influenced the ability to determine who to question and what to ask. (Milles et al.,2011).

Warren's (1979) research results demonstrated that a 3-year-old was once observed producing 31 questions for each hour he was awake. This was a normal questioning rate for a child of that age.

According to the researchers the reasons for asking questions are different but most authors agreed that children ask questions to obtain information and to solve problems (Miles et al. 2011); to polish language skills, make social contact and gain attention. (Warren,1979) Asking questions is a part of children cognitive development and intellectual growth. According to revised (Anderson et al, 2001) Bloom's Taxonomy (1956) the intellectual processes could be categorized into: Understanding, Evaluation, Analysis, Synthesis, Application, and Creativity.

The important are the places where children ask questions and the situations in which they ask. According to Reggio Emilia school philosophy an environment is the third teacher and the place in which child play is very important. (Fraser, & Gestwicki,.2000)

All knowledge is coded symbolically, but children are not just receivers but also creators of culture and producers of symbols (Nowak-Fabrykowski 2013). Children communicate their ideas to adults. Clark (2005), stressed the importance of listening to young children's perspective.

According to Piaget (1979) children start to use their symbolic thinking when they are about 2 years of age and when they start pretending. An intellectual development of children is stimulated when they have an opportunity to explore, discover, solve problems, and use their critical thinking. Children must develop their symbolic thinking because the world is made up of symbols that we find in everyday life existence and in schools.

Vygotsky (1978) believed that children learn better in relationship with others, they need others to develop. According to Bruner (1960) children are active learners that construct their new ideas using existing concepts and he suggests that intuitive and analytical thinking of children should be stimulated. However, Ken Robinson (2001) blames American school system that focusses on preparation for standardized test that hinders children's creativity and curiosity. This research is investigating the types of questions children ask.

2.Method

Ethnographic study based on investigation of behavior, the language, and the interaction among members of the culture sharing group (Creswell,2007, 69-70) of the young children use questions as a tool for learning.

2.1. Research question

This research project tries to answer 4 major questions:
What types of questions children ask?
What do they want to know the most?
Where and when they ask most of the questions?
 Is more questioning occurring in relationship between children or children and teachers?

2.2. Population

The studied population consists of 63 children 3 and 4 years old attending preschool in the Midwest of the USA.

2.3. Procedure

Observation of children was conducted throughout six months during children morning free play. The researcher moving between 4 observation booths collected questions that children asked. Each Monday the researcher spent 2 hrs in the different booth observing children playing or eating lunch.

The collected questions were analyzed using developed by the researcher table based on the revised Bloom's Taxonomy.

3. Analysis of data

First, the contextual analysis was performed as related to the places where children were located when they asked questions, the activities that they were involved in and the relationship in which the questioning occurred in (child to child or child to the teacher).

Table 1. Questions that children asked. Contextual analysis (examples).

Question asked by children	Place	Child to child	Activity	Child to Teacher
Do you know which my favorite food is? *What is your favorite taste?* *May I have that?* *What is that?* *Do you have this at home?* *Why he cannot have bread?*	Lunch room	G to G G to B B to B	Eating lunch	G to T B to T G to T
Are these shoes that I wore before *Can you zip it up?* *Can I have a hat?* *Can I put my hood on?* *How do you know which boot goes to which foot?*	Holloway		Dressing up. Getting ready to go outside	G to T B to T
What are you making? *What are you doing there?* *Why do you need glasses?* *Why do I need to wear googles?* *Can I go now?*	Construction/ Wood center	B to B G to B B to B	Boys cutting and gluing wooden pieces together Playing train and conductor	B to T B to T

Who is watching? *What is this guy doing?* *How does it work?* *Look what I did?* *Do you want to build the ramp for the cars?* *Am I right?*	Lego Center	4 boys	Making cars and putting on the ramp	B to T
Do you want to play game? *Do you want to be pilot of the truck?* *If I will be track you will be helicopter and you (pointing to the 3rd boy will be what? Maybe rescue track?* *Did you look at the picture?* *What is in the bag?* *Do you see what it is? Did you show what it is inside?* *Do you need a bandage?* *Do you need drops? How are you feeling?* *How are you?* *Do you want to go home?* *You don't want to play doctor anymore?* *Are you OK? Are you sick?* *Do you want another egg? Are you using that pan? Do you need bacon? Do you need apples? Bananas? Where is the banana jam?*	Pretend play	2 girls 3 boys 4 boys 3 children 1 G and 2 B 4 g and 3 boys	Playing track pilot, Following treasure map made by one child Playing game "What is in the bag?" Doctor office Kitchen	B to B B to B B to B G to B
What about if I make something cool for you?	Science center	2 boys	Boy looks at the rocks and tree barks and started making a construction.	B to B
Do you think that there is a good idea if they are 3 people at the computer? *Should 2 people touch keys?* *What are the other rules?* *Do you remember that I pad failed? Is this magic?*	Technology table	G to G to B 3 girls	Trying to play computer game on I Pad Computer program asking to draw magic vacuum.	
Can I touch the wheel? *Can I make a hole?* *Who is that? (referring to the picture on the puzzle)* *Can you save this?* *(puzzle) Can you grab 2 pieces of the puzzle in the same time?* *Where these pieces go?* *What are you drawing?* *Do you like my picture?* *Why I have to put play do this way it fit other way?*	Art room/ pottery wheel?	G to G	Making vase Making puzzle Child is drawing flowers Drawing	G to T Ch to T Ch to Ch G to T B to teacher
What is on the picture? *What do you see?*	Reading corner	G to G pretending to read		
Where is the baby? *Why baby does not have clothes on?*	House	G to G		

Table 2. An analysis of the types of questions for their intellectual properties.

Questions	Intellectual property	Place	Activity	Child to Child or Child to a Teacher
Can I touch the wheel? *What is on the picture?*		Art room	Making vase on the pottery wheel	Ch to T
Do you know which my favorite food is? *What is your favorite taste?* *May I have that?* *What is that?* *Do you have this at home?* *Why he cannot have bread?* *Why do you need glasses?* *Why do I need to wear googles?* *How do you know which boot goes to which foot?*	Understanding	Reading corner Lunch room Science room Hallway	Working with the wood pieces Putting shoes	Ch to Ch Ch to T Ch to T Ch to T
Do you like my picture? *Are you OK? Are you sick?*	Evaluation	Art room Pretend	Drawing Playing doctor	Ch to Ch and Ch to T Ch to Ch
Can you grab 2 pieces of the puzzle in the same time? *Where these pieces go?* *Why I have to put play do this way it fit other way?* *Should 2 people touch keys?* *What are the other rules?* *What is in the bag?* *Do you see what it is? Did you show what it is inside?* *How does it work?*	**Analysi**s	Art room Computer table Science room Lego table	Making puzzle Children playing on I Pad "What is in the bag? "game Making cars and the ramp	Ch to T Ch to Ch Ch to Ch
Do you think that there is a good idea if they are 3 people at the computer? Do you remember that I pad failed?	Synthesis		Children playing on I Pad	Ch to Ch
What are you drawing? *What is on the picture?* *What do you see?* *Is this magic?* *What about if I make something cool for you?* *What are you making* *Did you look at the picture*	Creative	Art room Technology table Science room Pretend	Drawing flowers The computer program asked to draw magic vacuum Putting bark of the tree and rocks together Treasure hunt from the map made by a child	Ch to Ch Ch to Ch Ch to Ch Ch to Ch

4. Results

The results demonstrated that children asked teachers practical questions for help, understanding or evaluation. Children asked each other question for analysis, synthesis, and creativity. The observation of children also revealed that children in play used rather statements and commands than questions.

4.1. Limitation

The biggest limitation was that the research may not hear all questions that children asked since

some children changed activities quickly and move to the other room or location. The focus of the observation was only on the group of children when they were engaged in activity for longer time.

5. Discussion

Without asking questions and investigating their environment children cannot develop understanding and ability to discover and wonder. However, this researcher fund that most of the children used rather commands than question. They told other children what they want them to do and where they supposed to go or how they should act like. The statements that they used were "I am going to another room" rather than " Can I go to another room?", " Make a ramp", " Feed the baby ", You will be helicopter", instead of " "Do you want to make a ramp?"," Would you like to feed the baby?", " Would you like to be helicopter?", etc. Children say "Let's play castle "instead of "Would you like to play castle?" The suggestion from this research is that the teachers must stimulate children's questioning and ask them many questions.

The books like *Why are pineapples prickly? Questions children ask about food* and other from the series *Why book* may be helpful.

References

Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., Wittrock, M.C. (2001). A Taxonomy for Learning, Teaching, and Assessing: A revision of Bloom's Taxonomy of Educational Objectives. New York: Pearson. Bloom, B.S. (Ed.). Engelhart, M.D., Furst, E.J., Hill, W.H., Krathwohl, D.R. (1956). Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain. New York: David McKay Co Inc

Bruner, J. (1960). The Process of Education. Cambridge, MA: Harvard University Pres.

Creswell, J.W. (2007). Qualitative Inquiry Research Design Choosing Among Five Approaches. London: Sage.

Clark, A. (2005). Ways of seeing: using the Mosaic approach to listen to young children's perspectives' in Clark, A., Kjorholt and Moss, P. (eds.)Beyond Listening. Children's perspectives on early childhood services. Bristol: Policy Press. 29-49.

Dewey, J. (2007) The School and Society. NY: New York, Cosimo.

Eigbert, J.and Roe ,M.F.(2014).The Power of Why: Connecting Curriculum to Students' Lives. Childhood Education,90(4)251-258.

Endsley, R. and Clarey,S. (1975). Answering Young children's Questions as a Determinant of Their Subsequent Questions- Asking Behavior. Development Psychology,11(6)863-

Fraser, Su & Gestwicki, C.(2000). Authentic childhood: Exploring Reggio Emilia in the classroom: NY: Delmar/Thompson Learning.

Landau, E. (1976). The questions children ask. Futures, (2),154-162.

Maynard.Ch. (1997) Why are pineapples prickly?: questions children ask about food. New York: DK Pub.

Mills, C. Legare, Ch. Grant, M. Landrum, Asheley R. (2011). Determining Who to Question, What to Ask, and How Much Information to Ask for: The Development of Inquiry in Young Children, Journal of Experimental Child Psychology, 110(4),.539-560

Nowak-Fabrykowski, K. (2013). Play as Narrative Demonstration of Children's Cognitive Development. Issues in Early Childhood. (20) Piaget, J. (1979). Language and though of the child. New York: Routlege and Kegan.

Robinson, K. (2001.) Out of Our Minds: Learning to Be Creative. UK: Oxford, Capstone.

Vygotsky, L. (1978). Mind in society: The development of higher psychological processes.

Warren, Sh. (1979) Questions Children Ask. DAY CARE AND EARLY EDUCATION. 0092-4199/79/1300-0016500.95

Zucker, T, Justice,L. Piasta, Sh. and Kaderavek, J (2010), Preschool teachers' literal and inferential questions and children's responses during whole-class shared reading. Early Childhood Research Quaterly. 25, (1) 65-83.

SOCIAL STUDIES, COMMON CORE, AND THE THREAT TO CONSTRUCTIVIST EDUCATION

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Abstract

Social studies, an umbrella subject area in K-12 education that includes the study of history, geography, and the social sciences as well as the promotion of active citizenship, is marginalized by Common Core and the accompanying high-stakes standardized testing. At their best, the Common Core Standards draw the attention of teachers to the need for conscious decision-making, systematic planning, and coordinated instruction as they work to develop student academic skill. However, at its worst, in the Common Core Standards pursuit of de-textualized teaching and learning, it undermines the very essence of social studies education and embrace learning in the absence of understanding. The fundamental problem with Common Core is that it is conceptually backwards (Strauss, 2014). Instead of motivating students to learn by presenting them with challenging questions and interesting content rooted in their interests and experiences, it removes substance from learning, raising a generation of students with limited exposure to not only the historical events of our nation, but also, the key tenets of citizenship. Three cases of outstanding constructivist teaching show policymakers and educators the power and potential of constructivism to empower and engage students as active members of our democracy. Constructivism must challenge Common Core and high-stakes testing; to adapt is to die.

Keywords: Social studies, constructivism, common core.

1. Introduction

In a 1997 essay, "Public Goods, Private Goods: the American Struggle Over Educational Goals," published in the American Educational Research Journal (Labaree, 1997: 39-81), David Labaree argued that three conflicting goals were at the root of much of the educational debate in the United States. He identified the conflicting goals as democratic equality, social efficiency, and social mobility. According to Labaree, those who see the purpose of education as promoting democratic equality believe schools should focus on preparing citizens to function in democratic communities and a democratic society. Advocates of social efficiency tend to view education from the perspective of taxpayers and want schools to focus on preparing a skilled workforce. The social mobility, or what he calls a consumer perspective, emphasizes preparation of students to compete for higher status, higher earning positions in schools that mirrored a hierarchical society that produced winners and losers (41-42).

What is interesting about the efficiency and mobility perspectives is that while they focus on individual student performance, advocates can claim to support social justice goals because they offer students from disadvantaged groups the opportunity to acquire market place skills and achieve economic advancement. In fact, this has been a major part of the push for Common Core Standards, high-stakes assessments aligned with the standards, the charter school movement, and calls for 21st century college and career readiness. It has been a particularly potent argument for garnering support in poorer, minority communities for "educational reform" and has been used to dismiss opposition to testing and charter schools as protests led by teacher unions and privileged White families (Quinlan, 2016; Ravitch, 2010; Ravitch, 2014).

2. Theory

Both the efficiency and mobility perspectives lend themselves to what Paulo Freire calls the "banking method" where teachers, as Gramscian agents of corporate and state authority, convey previously determined knowledge and workplace skills to willing, and unwilling, audiences. In addition, these hegemonic perspectives become excuses for social injustice deeply imbedded in a capitalist

economy that has a strong history of racism. Students who fail to take advantage of supposed opportunities can be dismissed, and social policy can be absolved, because these students are judged as essentially having failed because of their own poor choices. What pretends to be a commitment to social justice is in effect a conservative justification for continuing social and educational inequality in American society. The extreme focus of the efficiency and mobility perspectives on skills acquisition tied to a high-stakes testing regime as manifested in the national Common Core standards, and their appeal to minority parents who are gravely and legitimately concerned about the future of their children, makes these perspectives and Common Core serious threats to constructivist education and social studies as a vehicle for educating for active citizenship in a democratic society.

3. Common core

One reason Common Core is so connected to the "banking" or transmission model for education is its connection with entrepreneurs trying to profit by selling technology, computer software, online and print texts, and assessments aligned with their software and texts to larger integrated school markets. Joanne Weiss (2011), Chief of Staff to former U.S. Secretary of Education Arne Duncan, who led the Obama administration's Race to the Top initiative, explained the advantages of Common Core for entrepreneurs in an online article published by the Harvard Business Review. According to Weiss (2011), "The development of common standards and shared assessments radically alters the market for innovation in curriculum development, professional development, and formative assessments. Previously, these markets operated on a state-by-state basis, and often on a district-by-district basis. But the adoption of common standards and shared assessments means that education entrepreneurs will enjoy national markets where the best products can be taken to scale" (np).

The reason for the decontextualized skill focus of Common Core on reading, writing, and math is more closely related to the underlying political debate over education. When it comes to curriculum content, there is no general agreement in the United States over what should be taught, especially in social studies, but also in science where biology, geology (earth science), and physics challenge fundamentalist religious beliefs. Whatever claims are made by advocates of Common Core that the goal of American schools is to promote discovery and critical thinking, hallmarks of constructivism, are actually deemed by many to be too dangerous to be allowed into American schools because they encourage relativism (Jenkins, 2000) or as antithetical to a Christian perspective on education because they ignore Biblical truths, which we suppose is another form of relativism (Rickert, 2009).

4. Social studies

As social studies educators, we consider ourselves constructivists more as a matter of pragmatic practice than as advocates of an abstract educational principle. We reject relativism and identify with John Dewey's critique of "dogmatic" constructivists and progressive educators in *Experience and Education* (1938) who ignore the "meaning of subject-matter" and the importance of "organization within experience" and act as if teacher input into learning is an "invasion of individual freedom" (9-10).

We view teachers as curriculum creators and classroom decision makers who continually play an active role in promoting student learning. As pragmatic social studies constructivists one of our problems with Common Core is its rejection of contextual knowledge and insistence that students can make meaning of complex texts without prior understanding or experience, its preference for pre-packaged scripted lessons that remove teachers from the construction of meaningful curriculum, its regimentation of the classroom environment and focus on testing that takes away from the teacher's role as decision maker, its pretense of involving students in discovery and higher order thinking while narrowly channeling them down only one available or acceptable path way, its focus on decontextualized skill acquisition that undermines both conceptual understanding and skill acquisition, and its reliance on published material aligned with high-stakes tests that turn classrooms into test prep academies. As opposed to a constructivist approach to social studies classroom practice, Common Core aligned instruction at its best offers only a pretense of student involvement in knowledge construction.

5. Federal policy

On January 8, 2002, President George W. Bush signed the No Child Left Behind (NCLB) Act at Hamilton High School in Ohio. In a speech at the signing ceremony, Bush laid out the basis for what would become the Common Core State Standards Initiative. He also made clear the connection between his goals for education in the United States and the continual assessment of students. According to Bush

(2002), the "first principle" of NCLB was "accountability" and he defined accountability as testing. "In return for federal dollars," NCLB required states "design accountability systems to show parents and teachers whether or not children can read and write and add and subtract in grades three through eight" (25). Seven years later, as he was preparing to leave office, Bush (2009) restated this same position on education, NCLB, and high-stakes testing in remarks delivered at the General Philip Kearny School in Philadelphia, Pennsylvania. For Bush the key to higher expectations remained increased testing. "How can you possibly determine whether a child can read at grade level if you don't test? And for those who claim we're teaching the test, uh-uh. We're teaching a child to read so he or she can pass the test . . . Measurement is essential to success . . . Measurement is the gateway to true reform, and measurement is the best way to ensure parental involvement."

NCLB requires the impossible, that every child reach proficiency level by the 2013-2014 school year, or else states, districts, and schools would be in violation of the law. The federal government directed States to design the measurement tools that would show they were achieving measurable objectives. Penalties were set for states that did not comply. However, because of conservative opposition to federal intervention in state authority, the law permitted State Education Departments to set their standards very low and to make tests very easy.

Diane Ravitch (2016: SR8), former Under Secretary of Education in the 1989-1993 Bush administration, at one time a member of a number of conservative think tanks, and once a major proponent of national education standards, explained why she reversed her position on Common Core and high-stakes standardized assessments. According to Ravitch, instead of supporting schools where teachers had the "autonomy to tailor instruction to meet the needs of the children sitting in front of them," the federal Department of Education mandated a standardized testing regime where the "tests became the be-all and end-all of education, and states spent billions on them. Social scientists have long known that the best predictor of test scores is family income. Yet policy makers encouraged the firing of thousands of teachers and the closing of thousands of low-scoring public schools, mostly in poor black and Hispanic neighborhoods."

As states lowered their individual standards to avoid the implications of NCLB, Common Core was born. Its proponents argued that if tests were going to have meaning, they would have to be based on a universal national standard. A major problem, however, was sharp disagreement over what is important to know and why. For example, in 1995, when U.S. and world history content standards were released by the National Center for History in Schools, they were widely denounced in the popular media and overwhelmingly rejected by the U.S. Senate (Singer, 2015:14). Instead of openly airing debates over what is important to know and why, Common Core State Standards avoided the problem of conflicting curricular requirements in "red states" such as Texas and Alabama and "blue states" like New York and California by simply ignoring content and focusing on English / Language Arts and math skills and obscure measurements such as text complexity.

6. Origins of common core

Because it was developed through the National Governors Association and the Council of Chief State School Officers, Common Core supporters thought they could claim it was a state led initiative, not the work of the federal government or the publishing industry. The advisory board included representatives from the College Board testing company and a group called ACT, which is also involved in creating and marketing high-stakes assessments (Toch and Tyre, 2010). Mercedes Schneider (2013), who carefully tracked the development of Common Core on her EduBlog, deutsch29, showed how Gates money was then spread around widely to influence universities, foundations, and state education departments to sign up in support of the initiative. In 2009, the Obama Administration joined the effort to impose Common Core standards and tests with its Race to the Top (RTTT) initiative (Obama, 2010). The view of education promoted in Common Core was endorsed by President Obama at a meeting with U.S. governors in 2010 and is at the heart of the federal Race to the Top program. Originally RTTT consisted of a voluntary competition by states for billions of dollars in federal Department of Education grants, but it evolved into a stick federal authorities could use to force states to accept Common Core and Common Core-aligned, high-stakes tests, teacher assessment based on student test scores, as well as charter schools, in order to receive waivers from the impossible to achieve Bush era No Child Left Behind mandates.

At their best, the Common Core Standards draw the attention of teachers to the need for conscious decision-making, systematic planning, and coordinated instruction as they work to develop student academic skills, but this is basically teacher-centered instruction using commercial pre-packaged published or online material designed to boost test scores. However, as Carol Burris, a retired high school principal and a leading critic of Common Core argues, the fundamental problem with Common Core is

that it is conceptually backwards (Strauss, 2014). Instead of motivating students to learn by presenting them with challenging questions and interesting content rooted in their interests and experiences, it removes substance from learning. According to EngageNY a website that encourages New York State teachers and schools to incorporate Common Core in their curricula, content area teachers outside of ELA are supposed to emphasize literacy experiences instead of the subjects they are supposed to be teaching. Skill acquisition is at the forefront of instruction and assessment (Singer, 2013).

7. Constructivist classroom

In a constructivist classroom, literacy is not simply a technical skill. According to Freire, critical literacy requires reading and understanding both the world and the word so that people have the ability to use words to change the world. In this view, literacy is a necessary action for individual and societal freedom. Freire argues, and we agree, that interest in and the ability to "read the world" naturally precedes the ability to "read the word" (Freire & Macedo, 1987). When students are motivated to learn and want to discover new things about the world around them, skill acquisition comes easily. Children learn to read the same way they learn to walk and talk. But when students are turned-off by learning and boring classroom practices, they will never acquire more than rudimentary skills.

The most common activity in a secondary school social studies classroom should be document analysis, document defined broadly to include edited and unedited primary sources, written statements, transcribed speeches, photographs, pictures, charts, graphs, cartoons, and material objects. To promote student literacy, a well-organized curriculum should have students read and write about primary source documents in their ELA classes while they are analyzing them and discussing their historical context in social studies. Common Core can only make a significant difference in student performance when it recognizes the importance of motivating students to learn by engaging them in solving real problems where they can see the relationship to their lives. If it just pushes skills, it will not work.

An example of the content/skills misalignment is the way the New York State ELA and social studies curriculum address the European Holocaust. The reading list for the New York State Common Core English/Language Arts curriculum assigns books to grades based on text complexity, which is defined on the Common Core website as a combination of "levels of meaning, structure, language conventionality and clarity, and knowledge demands"; "readability measures and other scores of text complexity"; and "reader variables (such as motivation, knowledge, and experiences) and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)" (engageNY, nd). However, assigning students books and articles to read based on text complexity makes for really bad content choices. Because the focus in English/Language Arts classrooms is on plot, character, theme, and vocabulary rather than history, and because the books are selected based on text complexity, students are introduced to the European Holocaust without historical background, often by teachers who never studied about the Holocaust themselves. In New York State,

In New York State, for example, students first learn about the history of the European Holocaust and the systematic extermination of European Jews by Nazi Germany in the second semester of 10th grade. However, before that they are briefly introduced to the Holocaust through literature, but not as history. The Diary of Anne Frank: A Play by Frances Goodrich and Albert Hackett is recommended for 6th - 8th grade; The Book Thief by Markus Zusak and the speech, "Hope, Despair and Memory," by Elie Wiesel are recommended for study in the 9th and 10th grades. The Book Thief is assigned as reading before students have learned about the European Holocaust. Janet Maslin (2006), in a New York Times book review, described it as "Harry Potter and the Holocaust." The book is narrated by "Death" who apparently is unhappy with what he is assigned to do and confides to readers "To me, war is like the new boss who expects the impossible." Death, the narrator, claims "that I picked up each soul that day as if they were newly born. I even kissed a few weary, poisoned cheeks. I listened to their last, gasping cries. Their vanishing words. I watched their love and freed them from their fear." But the reality is that death did not cradle their souls, kiss their checks, or calm their fears." At another point, Death tells readers "Even death has a heart." But Death does not have a heart, there is no way to make the European Holocaust less horrible, and genocide, which continues into the 21st century, should not be made less horrible (Singer, 2014). Decontextualizing readers not only confuses students, but also does not allow them to connect their education to current events.

8. Conclusion

David Labaree (1997), in "Public Goods, Private Goods: the American Struggle Over Educational Goals," concluded that the "central problems with American education are not pedagogical or organizational or social or cultural in nature but are fundamentally political. That is, the problem is not

that we do not know how to make schools better but that we are fighting among ourselves about what goals schools should pursue." While as social studies educators and pragmatic constructivists we basically agree with Labaree, we would modify this statement. The pedagogical, organizational, social, and cultural disagreements about education in the United States are fundamentally political. We do not know how to make schools better because we do not agree about what goals schools should pursue and what type of society schools should prepare young people to create.

We believe a pragmatic constructive approach to social studies education infused with social action as preparation for life in a democratic society would be an important step. With Dewey, we know that giving students "something to do, not something to learn; and the doing is of such a nature as to demand thinking, or the intentional noting of connections; learning naturally results" (Dewey, 1916: 181).

References

Bush, G. W. (2002). "Remarks on signing the No Child Left Behind Act of 2001 in Hamilton, Ohio, January 8, 2002," *Public papers of the Presidents of the United States George W. Bush 2002 Book 1* (Washington DC: United States Government Printing Office, 2004), pp. 23-26.

Bush, G. W. (2009). President Bush discusses No Child Left Behind," *The White House*, http://georgewbush-whitehouse.archives.gov/news/releases/2009/01/20090108-2.html, accessed November 20, 2015.

Dewey, J. (1916). *Democracy and education*. New York: Macmillan.

engageNY (nd). "Text List for P-12 ELA," *engageNY*. Retrieved November 21, 2015 from http://www.engageny.org/resource/text-list-for-p-12-ela

Freire, P. and Macedo, D (1987). *Literacy, reading the word and world*. South Hadley, MA: Bergin & Garvey.

Jenkins, E. W. (2000). "Constructivism in school science education: Powerful model or the most dangerous intellectual tendency?" *Science & Education 9*, 599-610.

Labaree, D. (1997). "Public Goods, Private Goods: the American Struggle Over Educational Goals *American Educational Research Journal, 34*(1), 39-81.

Obama, B. (2010, February 22). "President Obama Calls for New Steps to Prepare America's Children for Success in College and Careers," *The White House*. Retrieved on November 21, 2015 from https://www.whitehouse.gov/the-press-office/president-obama-calls-new-steps-prepare-america-s-children-success-college-and-care.

Quinlan, C. (2016, April 11). "The Whitewashing of the Opt-Out Movement," *ThinkProgress*. Retrieved on June 22, 2016 from http://thinkprogress.org/education/2016/04/11/3767723/forgotten-activists-opt-out/.

Ravitch, D. (2010). *The Death and Life of the Great American School System: How Testing and Choice Are Undermining Education*. New York: Basic Books

Ravitch, D. (2014). *Reign of Error: The Hoax of the Privatization Movement and the Danger to America's Public Schools*. New York: Vintage.

Ravitch, D. (2016, July 24). "The Common Core Costs Billions and Hurts Students," *The New York Times*.

Singer, A. (2013, Summer-Fall). Turning Common Core on its head," *Social Science Docket, 13*(2), 2-6.

Singer, A. (2014, March 14). "Common Core and the Holocaust," *Huffington Post*. Retrieved November 21, 2015 from http://www.huffingtonpost.com/alan-singer/common-core-holocaust_b_4964319.html.

Singer, A. (2014). *Education Flashpoints, Fighting for America's Schools*. New York: Routledge.

Singer, A. (2015, April 25). "Students Tell Mayor de Blasio Turn Off the Metal Detectors!", *Huffington Post*. Retrieved June 22, 2016 from http://www.huffingtonpost.com/alan-singer/students-tell-mayor-de-bl_b_6735290.html.

Strauss, V. (2014, September 14). The Answer Sheet, "Common Core: Yes or no? A debate," *The Washington Post*. Retrieved November 21, 2015 from https://www.washingtonpost.com/news/answer-sheet/wp/2014/09/14/common-core-yes-or-no-a-debate/.

Toch, T. and Tyre, P. (2010, June). "How Will the Common Core Initiative Impact the Testing Industry?" *Thomas B. Fordham Institute*. Retrieved July 24, 2016 from http://www.edexcellencemedia.net/publications/2010/201006_CommonEdStandards/201006_EducationGovernance_TochTyre.pdf.

Weiss, Joanne (2011, March 31). "The Innovation Mismatch: "Smart Capital" and Education Innovation," *Harvard Business Review*, https://hbr.org/2011/03/the-innovation-mismatch-smart.html, accessed November 21, 2015.

A STUDY ON COOPERATIVE LEARNING OF STUDENTS PARTICIPATING IN LIBERAL ARTS CLASS OF MULTICULTURAL EDUCATION

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Abstract

Cooperative learning is considered as one of effective approaches with validity and generality in education to enhance all students' achievement. However, its value and application have been still ignored in higher education. The purpose of this study is to investigate the meaning of cooperative learning experience through the role play among undergraduate students who took a liberal arts course related to multicultural education of 'I' university in Korea. In this study, we adapted qualitative research method, including participant observation and focus group interview. We collected reports, questionnaires, journals, and role-play scripts. Finally, we analyzed the implications of experiences of students in terms of interdependence and individual responsibility as core elements of cooperative learning. Results are as follows: First, interdependence was experienced by students in dealing with conflicts in the cooperative learning process. It reflected their own will to pursue and practice a strategy for harmony and coexistence among members. Second, recognizing that one's role in a team influences on other members and team achievement, students seriously took individual responsibility. Individual accountability is rooted on and realized by interdependence. Such outcomes may not be pursued or gained without intentional means of cooperative learning. Thus, cooperative learning is a place of practice for harmony and coexistence. Interdependence and individual responsibility are cornerstone for coexistence.

Keywords: Role play, cooperative learning, coexistence, learning experience.

1. Introduction

The fourth industrial revolution has raised both hope and concern that replacing a significant portion of the labor force with an automated system of artificial intelligence will restructure the existing industrial structure. These changes call for new alternatives to university education. It is urgently necessary for university educators to find the teaching-learning model that fosters the talents with creativity and morality, which automated machine cannot replace with.

Cooperative learning has been studied by numerous experimental studies over the past century in a variety of learning environments, subjects, and research areas. Cooperative learning is recognized as an effective strategy with validity and generality, rarely seen in education (Johnson & Johnson, 2002; Kagan, 1994). Therefore, it is expected that the cooperative learning model will be used as a teaching-learning method appropriate for the fourth industrial age.

This study deals with a class of 'I' university in Korea which incorporates cooperative learning into liberal art education, especially multicultural education. This class is designed for students to learn cooperation by preparing for two role-plays with the themes of social interaction and multiculturalism. This study examined students' experiences in terms of interdependence and individual responsibility as the key elements of cooperative learning. Therefore, the research question is as follows: "How do undergraduate students perceive interdependence and personal accountability in the role-play-based cooperative learning process?".

2. Theoretical background

Cooperative learning is "the instructional use of small groups so that students work together to maximize their own and each other's learning" (Johnson & Johnson, 2018). Although there are some differences in the elements of cooperative learning according to scholars, they are considered as the five

elements: positive interdependence, face-to-face promotive interaction, individual accountability, appropriate use of social skills, and group processing (Johnson & Johnson, 2002). Among these, interdependence and individual accountability are the key elements in which scholars have commonly presented (Slavin, 1991; Rottier & Ogan, 1991; Ormrod, 1995; Sharan, 1990; Kim & Choi, 2018). Therefore, this study will examine cooperative learning experience in terms of interdependence and individual responsibility.

Previous studies on cooperative learning for undergraduate students were more than 305 cases since the 1960s (Johnson & Johnson, 2007; 1998). The first study was conducted in 1924, and 68% of studies have been conducted since the 1970s. The meta-analysis of college studies can be summarized as follows: First, cooperative learning is more effective in improving the academic achievement of adults over the age of 18 than competitive or individual learning. Second, cooperative learning enhances the quality of relationships among students and the perception of social support. Interestingly, it affects even human relationships among a variety of racial, cultural groups, and social classes. Third, cooperative learning contributes to the psychological health of college students. Cooperation positively affects self-esteem more than competition or individual learning. Psychological health promoted by cooperative experience can have a positive impact on university life at various levels of self-concept, self-efficacy, and adaptation to college life (Tinto, 1993). Fourth, cooperative learning affects the behavior and attitude of college students. Cooperative learning promotes college students' positive attitudes and behavior patterns toward learning, subjects, and colleges. Fifth, cooperative learning helps promote the citizenship of students. Each outcome by cooperative learning is influenced in reciprocal and virtuous cycle.

Korean studies on cooperative learning began in the middle of 1980s. Since the 1990s, research has expanded to a variety of research participants, ranging from infants to graduate students (Kim & Choi, 2018). Cooperative learning of undergraduate students in Korea has been analyzed in various aspects as follows: First, cooperative learning had a positive effect on subject definition, achievement goal orientation, academic motivation, problem-solving ability, learning motivation, learning attitude and learning satisfaction in terms of academic achievement (Kim, 2003; Park, 2010, Park & Ko, 2016; Jung, 2014; Lee, 2017). Cooperative learning positively affected peer relationships in terms of human relations (Kim, 2003). Cooperative learning promoted self-efficacy, life satisfaction, and emotional relief in terms of psychological adaptation (Kim, 2003; Park & Ko, 2016; Ahn & Kim, 2015; Choi, 2010).

However, although there is a consensus among researchers around the world about the positive effect of cooperative learning on student achievement, there yet remains controversial as to specific conditions under which such effects occur (Slavin, 1989). Thus, it is necessary to find how cooperative learning works under various conditions.

3. Research method

In order to develop teaching-learning methods suitable for the 4th industrial revolution and cultivate the talents needed for multicultural society, 'I' University in Korea has provided a core liberal arts course for undergraduate students, Multicultural Society and Coexistence Humanities (MSCH), since 2017. This course is based on flipped and blended learning format. In other words, students study the theory of multicultural society for 1.5 hours in an online class. And then, they experience cooperative learning for the remaining 1.5 hours in an offline class. 38 undergraduate students enrolled in this course at the autumn semester of 2017. Those students were organized into 8 teams with diverse backgrounds to cultivate a multicultural spirit. In other words, a team consisted of 5-6 students with diverse majors, birth places, ages, etc. They voluntarily selected a team leader. Team activity was to prepare for two role-plays as follows: the first one was dramatized about exchange, cooperation, competition, and conflict as the four types of social interaction in everyday life. The second one was to become foreign workers, international students, and marriage immigrants in Korea. The members of each group had experienced cooperative learning in the whole process of writing scripts, rehearsing and demonstrating role plays.

This study used qualitative research method. The researchers participated in and observed the whole process of cooperative learning. Undergraduate students participated in the questionnaires and journals about their own experiences of cooperative learning. Particularly, the FGI (Focus Group Interview) was conducted on the 8 team leaders who led those groups.

FGI was conducted at the end of November 2017, after the first role play ended and before the second role play was demonstrated. Those leaders voluntarily participated in the interview before the FGI was conducted. And the purpose and outline of the interview were explained and then interviews were conducted. This study confirmed their anonymity so that they could genuinely speak even sensitive experiences such as negative conflicts. The interview's main question is about interdependence and individual responsibility. Detailed questions are as the following table:

Table 1. Focus group interview's questions.

Elements of C.L.	Questions
Interdependence	· What was your positive experience with your team? · What is important to achieve successful team work? · Who did the best role in the team and what do you learn from the person's behavior or traits? · What are the behaviors and characteristics of team members who disturbed team activities? · Was there a big or small conflict? If so, how was it resolved? · What did you do when your comments were not accepted? · Are you the right person in a cooperative class? · What would you like to improve yourself? · What if you had a team member who was marginalized? · How many points do you give to your team's interdependence score?
Individual Responsibility	· What is the most demanding element for cooperative classes? (responsibility, positive interaction, communication ability, sympathy for others, etc) · Do you think you have fulfilled your responsibilities in performing your role? (In what ways do you think so?) · What do you think responsibility is? · In what situation did you feel the burden of responsibility? · What is missing or unsatisfied in your role?

4. Research results

4.1. Interdependence

As cooperative learning involves intimate interaction with unfamiliar and diverse students, it can lead to large and small conflicts in the early stages of group work. Particularly in this class, psychological conflicts were experienced, when individuals did not conduct their assigned roles properly or failed to fulfill their promises. However, team leaders were doing more cautiously to find harmonious relations rather than expressing personal psychological conflicts. Considering cooperative-learning-based class, they were aware that conflicts will have a negative impact on achieving common goals. In addition, avoiding conflict and striving for a positive relationship can be interpreted as reflecting the willingness to overcome conflicts and pursue their own strategies for harmony and coexistence.

"Some students were responsible for what they have to do until the next meeting. But, the others were not responsible for their roles. They did not actively join in conversation. Because of those people, we seemed to make our team mood in a soft and smooth way. We made giving our opinions not too burdensome" (Student # 08)

"First of all, it is basically necessary to respect others' time. I think, responsibility is not to disturb others. But responsibility is to do well one's own duty. However, unfortunately, there were not as many as such cases. For example, we have already made an appointment, but someone suddenly broke it because of his private thing like club activities. However, we became foolish." (Student # 06).

Not all members were active in group activities. Particularly at the beginning of group activities, they were either passive in their character traits, or they were difficult to communicate and harmonize because of different sex or school-entry year. At this time, team leaders understood the students who were marginalized in the group activities and encouraged their participation through careful consideration. For example, a leader deliberately facilitated participation, just as he pretended not to know what he knew and asked easy questions. This is not only a conscious effort to interact positively with others, but also a special concern for those marginalized in the team. As a practical action, that effort and concern had an important meaning in cooperative learning.

"There was a woman in my team. She was a freshman and younger than the others. She was not good at adapting to my team. Thus, I intended to become a fool, as I used to do so sometimes in a similar situation. I pretended not to know what I knew. But rather, I asked something to her who did not speak. If you do in this way, you will be able to make friends easily. Now, we came to a comfortable stage, in which we played with jokes, gave lots of opinions and laughed a lot. "(Student # 07).

4.2. Individual responsibility

Students shared a common opinion that responsibility was the most important personal ability to be involved in the cooperative learning process. As most of offline classes are centered on group activities, students in a team play a role in achieving a common goal with other students. The students were sensitively aware that if a member did not fulfill his or her role, the damage would be given to the other members. Thus, they worried that others or the whole team would be negatively appraised by them. They were more active in finding their own roles to overcome their own weakness.

"I thought that I was not good at making Power Point Slides or dramatizing my role for my team. So, I have to contribute to my team by engaging with other parts and rehearsing my part hard." (Student # 02).

Students stated that higher level of responsibility is required in the cooperative learning process. The difference between individual learning and cooperative learning is the degree of individual responsibility. In the case of individual learning, they are much freer, although they do not perform tasks or when they are absent. Student # 03 expressed responsibility in cooperative learning as 'consideration', which means that it helps others to take a more central role. This can be interpreted as the thoughtful consideration of other people rather than the self in the background of the sincere role performance in the cooperative learning.

"I personally think that consideration is an investment for having a good score. Consideration is a responsibility in terms of team. Although I don't evaluate myself as a good student, I have never been absent in my team activity, because this is a team activity. If it is an individual learning, I may not do my duty. But, this was a cooperative class. I had a sense of consideration not to cause harm to my team members. Consideration is a responsibility" (Student # 03).

In the performance of cooperative learning tasks, students perceived that roles should be distributed fairly. They thought that if someone plays a larger role or someone plays a lesser role, it does not fit with the fairness. It is because their score is evaluated by the score of the whole team in the cooperative class. It is logical that the role performance should be done fairly because they receive the same grades. However, it has more significance than equal performance and fair evaluation. Students were aware that when someone lacks a role, a lot of complaints can arise, and thus it can lead to conflict. Therefore, responsibility that is the most important in cooperative learning suggests that it should be based on positive interactions.

"When someone did not come to the last team meeting, she was given more weight of role in the role-play. If someone did in this way, and in front of other members, the student may be more conscious of the team evaluation and made more efforts for team. It was a better way." (Student # 04).

5. Conclusion and discussion

Although previous studies on cooperative learning in higher education confirmed a significant consensus on its positive effect, the working mechanism yet remains questionable. In addition, researches on cooperative learning in colleges are much lesser than those in elementary and secondary schools (Slavin, 1989). Furthermore, many universities' intentions are still paid more to fostering individual genius than to creating learning environment in which all students' achievement will be enhanced (Johnson, Johnson, & Smith, 1998b). Thus, it is necessary to carry out more researches on cooperative learning at university with various conditions and situations. In this regard, this study seeks to qualitatively find the meanings of two core elements of cooperative learning through the narratives of participants, especially of team leaders.

The liberal art course, Multicultural Society and Coexistence Humanities (MSCH), positively contributed to the formation of interdependence and individual accountability for undergraduate students. In the process of cooperative learning, students initially experienced conflicts, but they constantly attempted to form a positive relationship. In other words, interdependence was experienced by students in dealing with conflicts properly in the cooperative learning process. It reflected their own will to pursue and practice a strategy for harmony and coexistence among members. And recognizing that one's role in a team influences on other members and team achievement, students seriously took individual responsibility. Thus, it suggests that individual accountability is rooted on and realized by interdependence. However, such outcomes as interdependence and individual responsibility may not be pursued or gained without intentional and painstaking means of cooperative learning.

References

Johnson, D.W., & Johnson, R.T. (2002). *Multicultural education and human relations: Valuing diversity.* Boston, MA: Allyn & Bacon.

Kagan, S. (1994). *Cooperative learning.* San Clemente, CA: Kagan Publishing.

Ormrod, J.E. (1995). *Educational psychology: Principles and applications.* Englewood Cliffs, NJ: Prentice-Hall.

Rottier, J., & Ogan, B. J. (1991). *Cooperative learning in middle-level schools.* National Education Association. Washington, DC: NEA Professional Library, National Education Association.

Sharan, S. (1990). *Cooperative learning: Theory and research.* New York, NY: Praeger.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition.* Chicago, IL: University of Chicago Press.

Johnson, D. W. & Johnson, R. T. (1998a). Cooperative learning and social interdependence theory. In R.S. Tindale et al. (Ed.), *Theory and research on small groups* (pp.9-35). New York, NY: Plenum Press.

Ahn, D.H., & Kim, Y.R. (2015). Influencing effects of collaborative learning and self-directed learning on life satisfaction in university students. Korean Journal of Youth Studies, 22, 1-30.

Choi, J.Y. (2010). Study on the moral sensitivity of pre-service teachers in cooperative learning using dilemma discussion. *The Journal of Yeolin Education, 18,* 171-194.

Johnson, D.W., Johnson, R.T., & Smith, K.A. (1998b). Cooperative learning returns to college: What evidence is there that it works? *Change: The Magazine of Higher Learning, 30,* 27-35.

Johnson, D.W., Johnson, R.T., & Smith, K.A. (2007). The state of cooperative learning in postsecondary and professional settings. *Educational Psychology Review, 19,* 15-29.

Johnson, D.W., & Johnson, R.T. An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Researcher, 38,* 365-379.

Jung, S.H. (2014). The effects of the discussion and debate-based class in Jigsaw cooperative learning settings on TOEIC learners-Focused on learning attitudes and motivations. *The Journal of Yeolin Education, 22,* 181-206.

Kim Y.S., & Choi, H. (2018). A study on the cooperative learning experience of undergraduate students participating in liberal arts class. *The Journal of Yeolin Education, 26,* 145-164.

Kim K.J. (2003). The effects of cooperative learning and traditional lecturing strategies on the cognitive and affective outcomes of college students. *Education Development, 22,* 43-71.

Lee, M.A. (2017). University students' perceptions on the level of basic elements embedded in cooperative learning and class satisfaction. *Journal of Educational Innovation Research*, 27, 115-132.

Deutsch, M. (1949). A theory of cooperation and competition. *Human Relations, 2,* 129-152.

Park, Y.H. (2010). Effects of cooperative learning on goal orientation, motivation, and achievement of college students. *Asian Journal of Education, 11*, 91-119.

Park, J.H., & Ko, J.W. (2016). Relationship between collaborative self-efficacy and problem-solving skills of university students: Mediating effect of communication skills. *Journal of Education Innovation Research, 26*, 169-192.

Slavin, R.E. (1989). Research on cooperative learning: Consensus and controversy. *Educational Leadership, 47,* 52-54.

Slavin, R.E. (1991). Synthesis of research of cooperative learning. *Educational Leadership, 48,* 71-82.

Johnson, D.W., & Johnson, R.T. (2018). *An overview of cooperative learning.* Retrieved March 30, 2018, from http://www.co-operation.org/what-is-cooperative-learning

THE CRITICAL REFLEXIVITY OF FIELD SOCIAL WORKERS WHO ARE WORKING WITH FAMILIES: RECOMMENDATIONS FOR THE EDUCATIONAL PROCESS

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Abstract

In a postmodern society, where key institutions such as the family are failing, assistance in the form of social work is particularly important, especially for excluded families with children. The heterogeneity of families and society as a whole is increasing and that reality accompanies the problems and issues that social workers encounter. The rising complexity of problematic situations requires new knowledge and competency on the part of professionals. With the emphasis of the above, we carried out research on the critical reflexivity of field social workers who are working with families. The research aimed to map and analyze the critical reflexivity and its areas in field social workers. In the research, we viewed knowledge in social work as the interconnection of the theoretical ("know what") and practical level ("know how"). The research was based on a qualitative research strategy; this took the form of Critical Action Learning, and was built on a relationship-based model. The research methods included a combination of in-depth interviews, "photo voice" and focus groups. Social workers from three different organisations participated in the research. The research findings have shown that the critical reflexivity of social workers is associated with several areas, in particular with professionalism, an empowering approach to clients, and self-assurance in the social worker's role. Based on research, recommendations are given to facilitate the educational process of social workers.

Keywords: Critical reflexivity, social work, families, critical action learning, educational process.

1. Introduction

In a postmodern society, which is sometimes associated with the failure of key institutions such as the family, assistance in the form of social work becomes particularly important. The heterogeneity of families and society as a whole is increasing, and so in conjunction with this, the problems that social workers encounter are changing. The increasing complexity of problem situations requires new knowledge and competence on the part of professionals (Gardner, 2006).

Human service professionals are increasingly expected to work in a) uncertainty (less predictable life stages, family and community life and social norms) (Banks, 2002); b) complexity (the complexity of life situations of service users is growing); c) managerial work environments (professionals also face increasing demands for accountability). Workers are expected to operate in increasingly routinized systems (Taylor, White, 2000). The focus is on efficiency and outcome focused practice rather than on professional values combined with flexibility and creativity in response to client issues. The resulting loss of meaning has major implications for the ability to act according to social workers' personal and professional values; the quality of their work, job satisfaction and levels of anxiety (Gardner, 2009). More specifically, in organisational life, there is a fear of making mistakes (Banks, 2002). Professionals can feel the need to constantly justify what they are doing (Ferguson, Lavalette, Mooney, 2002).

One of the tools social workers use to deal with the complexity, uncertainty and other aforementioned demands, is to apply critical reflexivity. Morley (2004) considers critical reflexion a strategy to resist the effects of managerialism.

In the context of the abovementioned factors, we conducted research on critical reflexivity of field social workers working with families. The research aimed to map and analyze critical reflexivity and its areas in field social workers. One of the important areas is the understanding of the role of social workers in the context of social conditions and with their relationship to the client. The presented paper contains partial research data concerning these roles. It aims to describe and analyze the reflection of perceived roles of field social workers working with children at risk and their families, and, based on this analysis, to propose recommendations for the educational process.

2. The theoretical basis of the concept of critical reflexivity

In professional literature, the concepts of critical reflexivity and reflectivity are often perceived as interchangeable. Even in the presented study we consider these concepts to be interchangeable, but we still consider it beneficial to define the possibility of the different conceptualization of both concepts.

Reid (2011) points out that there is a wide range of views on critical reflectivity/reflexivity. Critical reflectivity is both a theoretical approach and a process. The concept of reflexivity comes from qualitative social science research, in particular, from the ethnographic approach. Reflectivity is a process linked to practice; it is the ability to find oneself in a given context and to realize how our own self is affecting the situation. Reflexivity and reflectivity can also be distinguished in this context by the reflection in action and the reflection on action, while the first named is related to the past event and reflection in action exists at the moment of creation of the given experience (Fook, 2016). The difference between critical reflectivity and reflexivity also lies in how the generated knowledge is applied. Critical reflection creates a theory from one incident, which is then generalized and applied to other incidents or situations. So there is an assumption that knowledge as truth exists. Reflexivity does not have the same objective; it focuses on a critical statement and moves toward creating knowledge in a specific situation in which the worker finds himself (D'Cruz et al., 2007).

If we want to define critical reflectivity (reflexivity), we have to take into account the fact that there are three "traditional" discourses defining critical reflection. The first discourse is an analytical philosophy that perceives reflective practice as a process of "thinking better." This tradition tells us that the better a person can recognize his/her weaknesses and logical errors, the more he/she is capable of making good decisions (Paul, Elder, 2007). The second one is American pragmatism, which perceives reflectivity primarily as an analysis of experience. In this tradition, a reflecting practitioner is one who is constantly seeking new information, new insights, new practices and new perspectives that can explain blind spots. The third discourse defining critical reflectivity is the tradition of critical theory where the practice of critical reflectivity is explicitly bound to encouraging the concept of social justice and to uncovering and correcting power inequalities (Fook, 2016).

D'Cruz et al. (2007) distinguish three umbrella concepts defining reflectivity (reflexivity). The first one is a concept that considers critical reflectivity as a client's ability to maximize his/her life chances, which has an impact on the role of the social worker and the relationship between the social worker and the client. The second concept considers reflectivity as a critical approach to professional practice, which questions the way knowledge is created and, on a broader level, how the process of creation of knowledge is influenced by power relations. It deals with how practitioners present their own knowledge (obtained from theory and practice) analysis. D'Cruz et al. (2004) consider reflectivity/reflexivity a form of destabilization or the questioning of what we consider to be knowledge and the daily defense of knowledge. Reflectivity is a process of looking at social and cultural artifacts and forms of thinking that saturate the practice of social work from outside as well as questioning and challenging the processes that make sense of the world. The third concept focuses on the role of emotions in the practice of social work. This concept is closely related to the second concept, being based on critical awareness of factors that influence the creation of knowledge.

2.1. The interconnection of theory and practice in the context of the concept of critical reflexivity

Within the framework of this article and within the framework of the implemented survey, we consider the theory and practice of social work to be closely linked and reflectivity to be the instrument of their interconnection. Healy (2005) distinguishes in social work between the formal theory and practical wisdom that is created in the practice of social work through the interaction of social workers with their clients. Similarly, Kane (2007) distinguishes between "*know what*" (the theoretical level) and "*know how*" (the practical level). Also, Fook (2016) states that social work knowledge consists of a dialectical relationship between "experience" and "education." The practice of social work can thus be perceived as a valuable source of theories of social work and knowledge that improves or complements formal theories (Fook, 2016). Reflective traditions in social work are currently trying to link both elements, and analyze the functioning of formal knowledge in practice and the transferability of practical knowledge into formal wisdom (Jones, 2010). Knowledge is thus created by a combination of both, not by their dichotomous separation (Healy, 2005).

3. Methodological design

The research was based on a qualitative research strategy; this took the form of Critical Action Learning, which is an evaluation method based on evaluating the mutual interaction of knowledge and

practice, and was built on a relationship-based model (Ruch, 2009) which defines social work as an activity embedded into a particular context (e.g. the context of an organisation). The research methods included a combination of in-depth interviews, "photo voice" and focus groups. The data presented in this article was obtained from three focus groups engaging field social workers working with families. Focus groups were run by the funnel method that means we advanced from the most general questions to the most specific ones. In terms of selected themes, the questions were focused on the reflection of perceived roles of field social workers working with families. Our communication partners have been selected for research using an intentional selection through the institution; the selection criterion was a minimum practical experience in field social work with families of at least one year. Social workers from three different organisations (providing social services in one anonymous town in the Czech Republic) participated in the research. The first focus groups were attended by four women (with a 6-year experience, on average), the second focus group was attended by one man and four women (with a 3-year experience, on average), and the third group was attended by six women (with a 4-year experience, on average). The data was analysed using the constructivist anchored theory of K. Charmaz (2003). As part of our research implementation, we have followed the Ethical Principles in Human Research, adopted by the American Psychological Association (APA) in 2010.

4. Results: The perceived roles of field social workers with families

Overall research findings have shown that the critical reflexivity of social workers is associated with several areas, in particular with professionalism, an empowering approach to clients, and self-assurance in the social worker's role. However, as part of this article, we present only partial data, focusing on the analysis of the perceived roles. Social workers identified three categories of roles.

The first category of roles is associated with working in a particular organisation. *"So they're taking us with the thought that we're primarily here for the XY organisation"* (FSW 4[1])). In connection with a social worker's role on behalf of a certain organisation, social workers also reflected on the roles of a colleague/team member and a subordinate. *"I am also here for others, because I have a long and wide experience in the field, so they often come to me for advice ... we help each other this way"* (FSW 5). *"So, in relation to the different roles, we have to take into account that we are also subordinate to our supervisor, we are not our own bosses"* (MSW 1). The role of an employee is also linked to this. *"I have to adhere to certain rules and methodologies too, even with my clients...for example, if the client does not show up for a meeting three times, our cooperation ends. It is also stipulated in the contract that we conclude at the start of the service provision"* (FSW 10). Social workers also mentioned that they perceive themselves as officials/bureaucrats.

"We constantly need to be completing loads of paperwork ... you make one phone call, and then you have to write everything down...every contact with the client ... there's always some document to fill out" (FSW 9). Social workers have also defined their role in relation to external legislation: *"It is important that we, as a social service, function in a certain modality...what I mean is that we are bound by certain laws"* (MSW 1). In relation to legislation, one of the social workers said that their role is also the role of one whose work can be inspected and quantified: *"Inspectors may come whenever they like, and what is important then are the reports and sheets...everything has to be measured and controlled, including social work"* (FSW 4).

The second category of roles is a category associated with expertise. *"It seems to me that they expect us to be psychologists and psychotherapists who know what to do about it"* (MSW 1). A role that social workers perceived is expected from them with their clients was the role of the decision-maker/executor. *"They often ask: How can I do that? What to do about this? And then it seems to me that they want us to solve it for them. For example, they often ask: Please, call there for me."* Social workers also frequently mentioned in the group discussion that they function as guides and navigators for their clients. *"We go with them...accompany them, for example, to an employment office to help them arrange for their social benefits or when they are looking for a flat"* (FSW 3). *"We also inform them where to go...we are their navigators"* (FSW 4). Another perceived role is the role of an advocate. *"The clients often want us to fight for their sake in some office, to defend them, to negotiate for them"* (FSW 9). Social workers, in relation to the role of an advocate, reflected that it was somewhat in conflict with the fact that they perceived themselves more as an enabler/transmitter of responsibility. *"It seems to me that clients sometimes shift the responsibility on us...that sometimes we try instead of them ... several social workers assist them, sometimes even from several different organisations, and they completely leave it up to them to arrange matters for them..."* (FSW 12).

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[1]FSW – Female Social Worker, MSW – Male Social Worker, 1–13 – Informant's Number

Social workers also agreed that clients project some of their family members' roles on them; the role of projected family members is therefore the third category of roles. *"I often hear from my clients, "You are like my grandmother, she was always..."* (FSW 8). *"I have a client who projects her son onto me...he is disabled and cannot help her, so she says that I am like her son"* (MSW 1). Social workers also felt that their clients often took them as their friend/"buddy" and their confidant; they also reflected that their clients often do not have anybody to share their problems with or *"just have a chat"* with. *"They often want to just talk and have us for friends, forgetting that we are social workers"* (FSW 8). *"I am such a confidant, it is my lifelong role"* (FSW 10). One social worker described that he sometimes feels like he doesn't have anything to offer. *"We sometimes get into a situation where we have no way of helping a client...we lack the instruments"* (MSW 1). In this context, social workers have perceived that they are often underappreciated. *"It often happens that one is trying to help but receives no feedback from the clients ... or it is even negative in the end"* (FSW 8).

Within the context of the described roles, the communication partners perceived two context levels. The first one is the "mission" level. *"I think there is a major difference between whether social work is viewed just as a job for a person or a mission. When it is a mission, a man feels it with his/her heart and sees something higher behind it, some principle. When it's just a job, then you just close the door at three o'clock and that's it"* (FSW 5). The second level is about viewing social work by the way the public sees it. This level was connected with social work being viewed as an inferior profession where the qualification of a social worker was devalued. *"Social work is totally an inferior profession in our country (Note: in the Czech Republic); it is the position of an official rather than an expert"* (MSW 1). Social workers also mentioned that the public did not know what their work was about. *"Society does not even know what a social worker is doing - people think that we only support those who are socially maladjusted, dependent on social benefits"* (FSW 4). They also reported that they are often described as *"the bad guys"* in the media. *"They often associate us with what they see on television...the cases where a bad social worker took a child from a family and they think that is what we do"* (MSW 1).

5. Discussion and recommendations for the educational process

The communication partners perceived the work of a field social worker with families as a multivalent-role. They identified several roles that are described in the literature, namely the role of a worker acting on behalf of a certain organisation; the role of a colleague/team member and a subordinate; the role of an employee; the role of an official/bureaucrat (see also Gojová, Glumbíková, 2015); the role of someone subject to inspection and quantification (see also Shier, Graham, 2014); the role of a worker who is required to have a number of specializations (see also Glumbíková et al., 2017); the role of a decision-maker/executor, a guide and a navigator, as well as an advocate; the role of family members, friends/"buddies" and confidants; the role of one who does not have anything to offer (see also Ferguson, Woodward, 2009; Gojová, Glumbíková, 2015); as well as the role of those who are underappreciated (see Okitikpi, Aymer, 2011). These roles were perceived in the context of the perception of social work as a "mission" and in the context of the perception of social work from the public's point of view (Gojová, Glumbíková, 2015).

The application of critical reflexivity by social workers is associated with a deeper understanding of individual reactions in social and organisational contexts (Sanaya, Gardner, 2012); embracing doubts, anxieties, uncertainties and contradictions, avoiding errors in decision making, dealing with messy or complex problems (Fook, 2016); reframing of the idea of power, thanks to which social workers are able to work using empowering methods (Fook, Askeland, 2006); increasing the sense of professionalism; creating more inclusive and at the same time less judgmental practice (Jones, 2010); creating better *"connectedness"* with colleagues, and, rather than focusing on building solution-based practice, focus more on building/developing skills to integrate the personal and the professional (Fook, 2016).

In relation to the above, critical reflexivity can be considered a key skill that students of social work should acquire during their education (Guransky et al., 2010). Reflective practice has become a standard curriculum in educational programmes (Tate, Sills, 2004); the inclusion of reflective practice in curricula also requires some accreditation programmes for the training of social workers, such as the Council of Social Work Education (2012). The purpose of teaching critical reflection/reflexion is to enable social work students to become autonomous and critical thinkers who are able to reflect the role of social work in society and their own role as a social worker. The teaching of critical reflexivity should be specifically focused on identifying dominant discourses that create the individually attributed meaning to human experience, (re)-conceptualizing the identity of social work and reflecting on a given social worker's own position of power in his/her professional role (Bay, 2010).

References

American Psychological Association. (2010). *Ethical principles of psychologists and code of conduct*. Washington, DC: APA. Retrieved from http://www.apa.org/ethics/code/

Banks, S. (2002). Professional values and accountabilities. In R. Adams, L. Dominelli & M. Payne, M. (Eds.), *Critical Practice in Social* Work (pp. 28-37). Basingstoke: Palgrave Macmillian.

Bay, U. (2010). Teaching critical reflection: A tool for transformative learning in social work? *Social Work Education, 30*(7), 745-758.

Charmaz, K. (2003). Qualitative interviewing and grounded theory analysis. In J. Holstein & J. Gubrium, J. F. (Eds.), *Inside interviewing. New lenses, new concerns* (pp. 311–330). Thousand Oaks, London, New Delhi: SAGE Publications.

Council on Social Work Education. (2012). *Educational policy and accreditation standards*. Alexandria, VA: CSWE. Retrieved from www.cswe.org/File.aspx?id=41861

D´Cruz, H., Gillingham, P., & Melendez, S. (2007). Reflexivity, its meanings and relevance for social work: A critical review of the literature. *The British Journal of Social Work, 37*(1), 73-90.

D´Cruz, H. & Jones, M. (2004). *Social work research: Ethical and political contexts*. London: Sage.

Ferguson, I., Lavalette, M. A., & Mooney, G. (2002). *Rethinking welfare: A critical perspective*. London: Sage.

Ferguson, I. & Woodward R. (2009). *Radical social work in practice: making a difference*. Portland, OR: Policy Press.

Fook, J. (2016). *Researching critical reflection. Multidisciplinary perspectives*. NY: Routledge.

Fook, J. & Askeland, G. (2006). The 'critical' in critical reflection. In S. White, J. Fook & F. Gardner (Eds.), *Critical reflection in health and social care* (pp. 40-54). Buckingham: Open University Press.

Gardner, F. (2006). *Working with human service organisations: Creating connections for practice*. Melbourne: Oxford University Press.

Gardner, F. (2009). Affirming values: using critical reflection to explore meaning and professional practice. *Reflective Practice, 10*(2), 179-190.

Glumbíková, K., Gřundělová, B., Kaniová, I., Krausová, A., Lukešová, K., Stanková, Z., & Špiláčková, M. (2017). Sociální práce a terapie v azylových domech. *Sociální práce / Sociálná práca, 17*(5), 36-51.

Gojová, A. & Glumbíková, K. (2015). Bezmocná sociální práce jako zdroj zplnomocnění. *Sociální práce / Sociálná práca, 15*(5), 52-64.

Gursansky, D., Quinn, D., & Le Sueur, E. (2010). Authenticity in reflection: Building reflective skills for social work. *Social Work Education, 29*(7), 778-791.

Healy, K. (2005). *Social work theories in context: Creating frameworks for practice*. Basingstoke: Palgrave MacMilan.

Jones, C. (2010). Voices from the front line: State social workers and New Labour. *British Journal of Social Work, 31*, 547-562.

Kane, G. (2007). Step-by-step: A model for practice-based learning. *The Journal of Continuing Education in the Health Professions, 27*(4), 220-226.

Morley, C. (2004). Criticial reflection in social work: A response to globalisation? *International Journal of Social Welfare, 13*(4), 297-303.

Okitikpi, T. & Aymer, C. (2010). *Key concepts in anti-discriminatory social work*. Thousand Oaks, Calif.: SAGE.

Paul, R. W. & Elder, L. (2007). *The thinker´s guide to the art of socratic questionning*. Tomales, CA: Foundation for critical thinking.

Reid, C. E. (2011). Rationale argument mapping software. *Journal of Technology in Human Services, 29*, 147-154.

Ruch, G. (2009). Identifying 'the critical' in a relationship-based model of reflection. *European Journal of Social Work*, 12(3), 349-362.

Sanaya, R. & Gardner, F. (2012). Critical reflexion to identity gaps between espoused theory and theory in use. *Social Work Advance Acess, 57*(2). doi: 10.1093/sw/sws037

Shier, M. L. & Graham, J. R. (2014). Social policy in Canada. In *Encyclopedia of Social Work*. New York, NY: Oxford University Press/NASW.

Tate, S. & Sills, M. (Eds.). (2004). *The development of critical reflection in the health professions*. London: Higher Education Authority.

Taylor, C. A. & White, S. (2000). *Practising reflexivity in health and welfare: Making knowledge*. Buckingham, England: Open University Press.

LECTURES, ATTENDANCE AND ENGAGEMENT: CAN WE REVERSE THE DECLINE?

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Abstract

Action research methodologies can be helpful to instigate and research the impact of multiple or iterative changes to practice. The teaching of mathematics to non-mathematicians is a long standing and multifaceted challenge. One of the more recent complexities is linked to student engagement with lecture environments. This paper provides readers with personal insights to the preliminary stages of an action research project where a flipped classroom model has been applied to a business mathematics curriculum where lectures are delivered to 300+ students. The flipped classroom was chosen due to the wealth of literature linking the paradigm to student satisfaction and engagement. The first cycle revealed unanticipated yet key findings which highlights both levels of satisfaction and the potential learning gains are significantly linked to students' commitment to the process.

Keywords: Lectures, student engagement, flipped classroom.

1. Introduction

Business programmes universally include curricula which is based on mathematics and statistics – in this case referred to as business analysis. These courses historically and still continue to strike fear into many a student (Howard & Warwick, 2016; Richardson & Suinn, 1972). Programme/course nomenclature may have changed, numbers and the diversity of student cohorts have increased but core curriculum topics in business analysis have changed little in 20+ years. Alongside, the well-established mathematical anxiety, there is an evolving and increasing concern in respect to student attendance and engagement particularly within lectures.

Literature reveals this is a global concern with studies from Australasia, US, Europe and Asia, all conducting research into student lecture engagement (Chan, Luk, & Zeng, 2014; Exeter et al., 2010; Kashif & Basharat, 2014; Reivera-Pelayo, Munk, Zacharias, & Braun, 2013).

One of the most current trends in revitalising lectures is a flipped classroom model (O'Flaherty & Phillips, 2015). In its simplest form, the flipped technique uses classroom contact to complete what was traditionally homework, and vice versa. (Bishop & Verleger, 2013) proposed a more definitive definition for HE environments i.e. that out of class activities must include computer-based instruction with in class activity focussing on student-completed tasks. Through natural progression, the business analysis curriculum had a wealth of existing computer based resources included recordings of lectures; PowerPoint slides which accompanied these lectures; additional videos relating to spreadsheet skills and a number of worked examples for each of the curriculum topics. These resources indicated that a flipped classroom model was 90-95% already in place, hence providing a positive proposition for applying a flipped model to revitalise the lecture programme.

Lecture attendance was historically poor. Content was delivered via a one- hour lecture to 300+ students and two-hour computer workshops delivered to groups of 20. Anecdotal evidence suggested that students viewed workshop attendance as sufficient. However, staff delivering the module were aware that this impacted on the ability to fully address the principal module learning outcome:

*"Understand a variety of introductory statistical/spreadsheet techniques and their application to the **analysis and interpretation** of business data…"*

Workshops were designed for students to accumulate spreadsheet skills linked to the techniques and complete practice assessment questions focussed on "**analysis and interpretation**" of the data. However poor lecture attendance impacted directly on workshop content and in particular time for **"analysis and interpretation"** lacking. This consequently was reflected in assessment performance. It was therefore anticipated that the introduction of a flipped classroom model would achieve the following objectives:

• Make clear and specific delineation between skills acquisition as a workshop activity and **"analysis and interpretation"** via practice assessments a flipped lecture activity.

• By focussing on practice assessments, ensure the lecture programme added-value to the workshop content and hence result in improved lecture attendance; increased levels of student engagement; enhanced assessment performance.

2. Flipped classroom literature

There is a vast wealth of literature pertaining to flipped classrooms including two recent key publications that provide summaries of research within this area to date (Bishop & Verleger, 2013; O'Flaherty & Phillips, 2015). The main advantages of a flipped classroom are viewed as removing passive student learning; allowing classroom time to be utilized for higher order cognitive abilities and by students assuming ownership of learning they are more satisfied and less likely to do the "minimum" grade requirement (Chappell, 2015). A number of similarly positive scholarly articles corroborates this. McLaughlin et al. (2013) viewing the significant strengths of the flipped model as the promotion of student empowerment and engagement, other studies claiming assessment performance was improved (Albert & Beatty, 2014). Additional studies noting that the flipped classroom design allows educators to focus in class activities on the higher order skills within Blooms Taxonomy (Huang & Lin, 2017; Rufatto et al., 2016). Abeysekera & Dawson (2015) along with Hussey, Richmond, & Fleck (2015) reports that in HE although there was much evidence of enthusiasm for the flipped model, literature which measured changes in academic performance is still in its infancy. Abeysekera & Dawson (2015) propose that there are several gaps in research and proposed that research should now focus on: Small-scale local interventions based on experimental groups; Larger scale meta-studies but recognise this depends on the completion of 1 or Qualitative studies of student experiences of the Flipped Classroom approach.

Unfortunately, the use of experimental versus control group designs are not viewed favourably in UK higher education. However, as the business analysis curriculum under investigation here is delivered to approximately 350-400 students. Research conducted would provide an opportunity for a large scale study (albeit not a meta-analysis) and through an appropriate methodological approach provide an opportunity for both longitudinal and qualitative data analysis.

3. Methodology

The flipped classroom has recently been subject to a special issue of the Educational Technology and Society journal. The editors remarked that there was now a need for research to move on to "How" to implement the flipped classroom and that action research has been rarely used within flipped classroom research (Song, Jong, Chang, & Chen, 2017). O'Flaherty and Philips (2015) additionally observed that action research would be a valuable methodology to consider the longer-term development of flipped classroom models. This, indicating a positive rationale for the applying this methodology.

Action research is particularly useful in education as it addresses broader issues in the evaluation of learning: such as the need for evaluations to be open ended in order to capture potentially unanticipated learning outcomes (Watkins, H., & deMarrais, 2011); the potential to learn from evaluation processes themselves (Bimpitsos & Petridou, 2012) and the need to continuously re-align evaluation processes with ongoing changes in educational programmes (Cassell & Johnnson, 2006).

On a practical level, Norton (2001) formulated the ITDEM acronym for progressing an action research project: I concerns the *identification* of the problem in practice; T involves *thinking* of how to *tackle* the issues (both covered in the introduction); D the pragmatic aspect is *Doing* the action; E the *evaluation* of the action(s) and M concerning the *modification* of action(s) in preparation for the next cycle.

This project is in its second cycle. This paper primarily focuses on the first cycle. Conference timing is such that the oral presentation will append findings from the second cycle.

4. Findings: materials design

It is recognised that design of the flipped classroom paradigm requires both time and commitment from the staff involved (O'Flaherty & Phillips, 2015). The business analysis module under investigation involves approximately 10 staff in its delivery. Although, the module already had a number of suitable materials already in place. It was recognised that additional elements would be beneficial. For example, the module is now delivered to an increasing diversity of programme titles. These broadly fall into five subject groupings: Business and Management; Accountancy, Finance and Economics; Human Resource Management, Logistics, Innovation and Enterprise and Marketing and Tourism Management.

The curriculum splits into six topics. Practice questions existed but did not full capture the full diversity of subjects. The teaching team, as potential co-researchers, agreed their initial strengths would be in the co-creation of (5*6) practice assessments. The practice assessments created would then additionally act as the core focus for all contact sessions. The workshops would focus on basics of the theory and spreadsheet application. Lectures, through formative assessment placing focus on "analysis and interpretation". The lead researcher prepared all questions for two of the six topics covered to demonstrate to colleagues the expectations of format and level of difficulty. The teaching team agreed to have the new materials in place at the appropriate delivery points in the first cycle.

The lead researcher delivered all lectures and two of the 18 workshop sessions. Students were provided with a full explanation of the model and how this would operate in the first lecture and on the virtual learning environment. Materials prepared by colleagues were required from week 4 onwards, despite several reminders, colleagues did not met deadlines. Moreover, colleagues had agreed to assist with some of the interactive activities planned through co-delivery of some lectures but this assistance never emerged – unanticipated but significant outcomes. It was apparent that in order to avoid project failure, the lead-researcher had to intervene and engage in a more significant and disproportionate role than planned. Hussey et al. (2015) amongst others noted in O'Flaherty and Philips (2015) summary observed that staff capacity and commitment could be significant obstacle to operating a flipped classroom. This did cause a domino effect on the lead-researcher who was forced to re-assess and redesign a number of the planned lecture activities and this resulted in the lecture sessions relying on technological approaches (e.g. Turning point, Linoit) as the only form of interactivity – not ideal. As part of the *evaluation* process, staff acknowledged that personal contributions should have been improved. Some acknowledged that they would be unable to continue as co-researchers whereas others pledged a recommitment to the research process.

5. Findings: attendance

The University permits attendance to be recorded in two ways. Principally, battery operated handsets designed to read bar codes (i.e. student IDs) are utilised. In a lecture, it is recognized that the hand scanners that needed to be manually passed round are not reliable. Nevertheless, as this was the only option available, these combined systems recorded attendance at all sessions.

In the first cycle, *evaluation* was slightly restricted. Due to a lack of records a direct comparative analysis of lecture attendance was not possible and observations are based on anecdotal comparisons. As observed with previous cohorts, decreases in lecture attendance did occur. Forty-seven percent of the cohort attended less than half of the scheduled lecture sessions. Official figures indicated that even the introductory lecture was viewed as poorly attended. However, workshop attendance, where prior records were available, was improved with 81% of the cohort attending at least half of the sessions, compared with 75% and 73% in 2016/17. Although, at first glance encouraging, all teaching staff agreed that a minimum acceptable level of attendance rate is 80%. On this basis, just over half the cohort are deemed to have acceptable workshop attendance levels. Lecture attendance and combined workshop/lecture attendance levels are judged to be poor with only 18.1% with an acceptable overall attendance. Therefore, even accounting for recording issues, the first action research cycle indicates the flipped classroom model did not improve attendance.

6. Findings: student views

The University has two standard feedback mechanisms. A Staff: Student Committee held half way through the semester and feedback questionnaires distributed towards the end of teaching but before the assessment. In 2017/18, end-point feedback, for the first time, has been fully automated. Unfortunately, analysis of the qualitative statements which form part of the feedback revealed a serious issue with system reliability. Significant numbers of the comments made were clearly referring to different curricula which, for example was openly named. Only 20% of comments were clearly identifiable as relating directly to Business Analysis casting serious doubt over the validity of the quantitative results. Nevertheless, these results throughout illustrated a neutral opinion to the curriculum and its teaching methods. Where qualitative comments from the feedback and committee could be attributed to the module, opinions were clearly mixed. Positive feedback was received in respect to some of the interactive technologies and the workshop sessions. Many students expressed doubts in respect to the flipped classroom model which was viewed as non-traditional. Although, at the committee one student representative stated their peers were clearly not making the most of the opportunity the flipped model presented.

The stage one student feedback is similar to a study conducted by Strayer (2012) involving introductory statistics This study involved a control group subject to traditional teaching methods and an

experimental group subject to a flipped classroom model. Strayer's findings illustrated that the satisfaction levels were higher in the traditional setting and it was proposed that flipped classroom models may not be appropriate for all subjects. Keeping in mind validity issues uncovered, the evaluation indicated that in this case there are potential parallels to Strayer's conclusion. In an attempt to minimise the focus of a flipped classroom being **different,** *modifications* in the second cycle have removed any direct references to the application of a flipped model to teaching practice.

7. Findings: student engagement and assessment performance

From a staff viewpoint, the most significant barrier to the flipped model was students lack of preparation for classroom contact and perceived lack of engagement with out of class activities. In the case of the former, the lead researcher had to take an escalating number of counteracting interventions. For example, providing students with solutions to print, sending weekly email reminders. It was not until the last two topics, when handouts were physically distributed within the lecture sessions, that it felt that the lecture was being received positively. O'Flaherty and Philips' (2015) review indicated lack of student interaction could become an additional learning challenge, and this was certainly the case here. Perhaps not unsurprisingly, throughout the feedback process at no point did students acknowledge that their own engagement was a factor of concern.

Unfortunately, in comparison to the previous academic year, there was a significant reduction in assessment performance. Average examination marks had fallen from 53.7% to 41.5%. The failure rate increasing to 37.9% from 17%. This is not unique, as noted by (Rodriguez, 2016) some studies applying flipped models in engineering topics also experienced declines in performance. When results were compared with attendance levels there was clear and significant correlation ($p<0.01$) between levels of attendance and performance. The higher levels of correlation occurred with lecture attendance and overall attendance ($r=0.31$ and 0.30 respectively). Although, still significant, workshops which students have traditionally seen as more beneficial had the lowest correlation ($r=0.18$). Hwang & Lai (2017) suggests that due to the change in paradigm students will require more direction in the form of bridging activities. Lessons have been learned and as a *modification* to the second cycle significantly more direction has been introduced. As noted by Abeysekera & Dawson (2015) student engagement with out of class activities is a perennial issue, for the second cycle some technological measurement will be possible. In addition, analysis of the first cycle continues and overlaps with the second cycle operation. Action research methodology will include qualitative evaluations to question students in respect to perceived engagement.

8. Conclusions

There is no doubt that, currently, the flipped model has not met the anticipated objectives. All teaching staff are in agreement that the design of the flipped model as made much clearer delineations between the workshops and lectures. Furthermore, the development of the practice assessments and making the "analysis and interpretation" elements the focus of the lecture has ensured that there is an added value to the lecture. Issues with material development of the project illustrated that staff commitment to the project is as important as that of student engagement.

The research has also enabled the team to undertake more detailed analysis than previously and formally confirm a number of existing suspicions in respect to performance and attendance. It is recognised that issues with attendance and student engagement are a paramount concern. There is an impression amongst colleagues that the flipped classroom model has brought to the fore issues with student engagement which, has been masked for a number of years. Therefore, despite the poorer assessment performance the model will continue to be implemented and staff have reaffirmed their commitment to the project.

The ITDEM process of action research enables the team to introduce further interventions as and when issues emerge. These can be simple, e.g. providing more direction, being stricter in respect to preparing for class activities, through to examining the complexities which surround student engagement. For example a number of more recent studies have made links between performance and students' self-efficacy (Hwang & Lai, 2017). This is a line of inquiry that will be pursued in respect to the cohort in cycle 2.

The module team have never been entirely comfortable with standard feedback mechanisms and the issues encountered this year have had serious implications for the first cycle's evaluation. For instance, it is very difficult to assess the impact of individual staff on the student experience. The timing of distribution in relation to some of the statements is questionable. Statements in respect to assessment would be better placed once the assessment has taken place.

During stage 2, the neutrality of the research assistant will significantly assist in gather post assessment qualitative feedback. The team we also seek alternative formats of quantitative feedback

mechanisms. This further demonstrates how actions beget actions over the longer term. Action research in its early stages appears to generate more issues than solutions, but there is a possibility that even these early setbacks can lead to greater insights in the longer term.

References

Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research. *Higher Education Research and Development, 34*(1), 1-14.

Albert, M., & Beatty, B. J. (2014). Flipping the Classroom Applications to Curriculum Redesign for an Introduction to Management Course: Impact on Grades,. *Journal of Education for Business, 89*(8), 419-424.

Bimpitsos, C., & Petridou, E. (2012). A transdisciplinary approach to training: preliminary research findings based on a case analysis. . *European Journal of Training and Development, 36*(9), 911-929.

Bishop, J. L., & Verleger, M. A. (2013, June). *The flipped classroom: A survey of the research.* Paper presented at the ASEE National Conference Proceedings, Atlanta, GA.

Cassell, C., & Johnnson, P. (2006). Action research: Explaining the diversity. *Human Relations, 59*(6), 783-814.

Chan, C. K. Y., Luk, L. Y. Y., & Zeng, M. (2014). Teachers' perceptions of student evaluations of teaching. *Educational Research and Evaluation, 20*(4), 275-289. doi:10.1080/13803611.2014.932698

Chappell. (2015). Pros and cons of teaching a flipped classroom. Retrieved on 12 December 2017 from https://blog.versal.com/2015/06/10/pros-and-cons-of-teaching-a-flipped-classroom/

Exeter, D. J., Ameratunga, S., Ratima, M., Morton, S., Dickson, M., Hsu, D., & Jackson, D. (2010). Student engagement in very large classes: the teachers' perspective. *Studies in Higher Education, 35*(7),
761-775.

Howard, A., & Warwick, J. (2016). The Prevalence of Mathematical Anxiety in a Business School: A Comparative Study across Subject Areas. *International Journal of Social Sciences & Educational Studies, 3*(2), 4-25.

Huang, C. K., & Lin, C. Y. (2017). Flipping Business Education: Transformative Use of Team-Based Learning in Human Resource Management Classrooms. *Educational Technology & Society, 20*(1), 323-336.

Hussey, H. D., Richmond, A. S., & Fleck, B. (2015). A Primer for Creating a Flipped Psychology Course. *Sage, 14*(2), 169-185.

Hwang, G.-J., & Lai, C.-L. (2017). Facilitating and Bridging Out-Of-Class and In-Class Learning: An Interactive E-Book-Based Flipped Learning Approach for Math Courses. *Educational Technology & Society, 20*(1), 184-197.

Kashif, M., & Basharat, S. (2014). Factors impacting university students' engagement with classroom activities: qualitative study. *International Journal of Management in Education, 8*(3), 209-224.

Norton. (2001). Researching Your Teaching: The Case for Action Research *Psychology Learning and Teaching, 1*(1), 21-27.

O'Flaherty, J., & Phillips, C. (2015). The use of flipped classrooms in higher education: A scoping review. . *The Internet and Higher Education, 25*, 85-95.

Reivera-Pelayo, V., Munk, J., Zacharias, V., & Braun, S. (2013). Live Interest Meter – Learning from Quantified Feedback in Mass Lectures.

Richardson, F. C., & Suinn, R. M. (1972). The Mathematics Anxiety Rating Scale: Psychometric data. . *Journal of counseling psychology, 19*(6), 551-554.

Rodriguez, J. E. (2016). A massively flipped class: Designing and implementing active learning information literacy instruction for a large enrollment course. *Reference Services Review, 44*(1), 4-20.

Rufatto, R., Dickin, H., Flurescu, A., Lorch, C., Bremigan, R., & Lorch, J. (2016). Learner-centred pedagogy in a liberal arts mathematics course. . *Problems, Resources and Issues in Mathematics Undergraduate Studies., 26*(9), 863-877.

Song, Y., Jong, M. S. Y., Chang, M., & Chen, W. (2017). "HOW" to Design, Implement and Evaluate the Flipped Classroom? - A Synthesis. *Educational Technology & Society, 20*(1), 180-183.

Strayer, J. F. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environment Research, 15*, 171-193.

Watkins, K. E., H., L. I., & deMarrais, K. (2011). Evaluating Executive leadership Programmes: A Theory of Change Approach. *Advances in Developing Human Resources, 13*(2), 208-239.

L2-PROFICIENCY AND MATHEMATIC COMPETENCES OF 10-12 YEAR-OLD CHILDREN IN SWISS TWO-WAY IMMERSION ELEMENTARY SCHOOL PROJECT *FIBI*

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Abstract

This article presents a study that was conducted in the (Swiss-) German and French bilingual city Biel/Bienne in Switzerland during 2016-2017. The paper investigates the effect of a two-way immersion school project (FiBi) on the L2-Proficiency of children 10-12 years old. Using mathematic tests, the study examines whether learning in another language affects school competences. Comparing FiBi students (n=41) and a control group (n=24), the analysis reveals a significant higher L2 proficiency in four tested competences and no significant difference in mathematics results. Some recommendations for the improvement of the two-way immersion project and for further research are presented in the final part of the paper.

Keywords: Bilingualism, two-way immersion, French, German, L2-Proficiency, primary school.

1. Introduction

Bilingualism is one clear goal of education nowadays especially in multilingual European countries, such as Switzerland. Language policies encourage immersion projects through recommendations, articles and teacher training (CDIP 2004; Council of Europe, 2001). However, research on bilingualism in primary school and its concrete implementation are still missing, belonging on regional and political resources rather than on initiatives from education stakeholders.

The city of Biel/Bienne, the biggest bilingual city in Switzerland, started in 2010 a two-immersion primary school project, called *Filière Bilingue* (hereafter FiBi). French and German, both national and majority languages in Switzerland, are used as the language of teaching to roughly the same extent. Pupils of both language communities as well as children from migrant backgrounds are represented in the classes in order to enhance bilingual interaction. In 2014, a first evaluation of the speaking competences of children involved in this project was achieved (Buser, 2014) and the city council and the canton of Berne have decided in 2016 to proceed to new assessments of L2-Proficiency and mathematics competences within the frame of FiBi.

This paper presents some of the results of the 2016 evaluation of FiBi. First, the theoretical frame and the research question about L2-Proficiency and mathematics competences will be presented. Thereafter, the methodological approaches chosen to pursue the research questions will be briefly introduced. Finally, the presentation of the results as well as some recommendations for this project will conclude the paper.

2. Bilingualism and immersion

Many studies on bilingual schools have been conducted around the world, often aiming to measure the impact of the program on the L1, the L2, other school subjects or even on social and emotional aspects (Gajo, 2001). Until the late 1960s-1970s, opinions about bilingualism were controversial and some people considered it as an obstacle to cognitive development and school success. However, many studies in Canada, USA, Australia and Europe showed evidence of the benefits of bilingualism. For example, Bialystok (2001) argues that bilingual individuals would show better competences in focusing on one activity and making decisions. They also tend to have an easier time remembering lists of words. Cavalli (2005) presents many studies carried out on bilingual school projects between 1970 and 1990 and highlights that: 1) competences in L1 are not slowed by the presence of a L2; 2) receptive competences of pupils of immersion projects can be comparable as natives pupils in the target language; 3) no significant loss in the

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other school discipline was identified; 4) cognitive creativity and flexibility were detected by pupils of immersion projects and 5) less prejudice and more adaptation capacity was noted by bilingual children.

Since the beginning of the 20th century, different researchers have tried to define bilingualism. Bloomfield (1933) and Lebrun (1982) used to describe it as a perfect command of two languages. This definition would exclude many speakers of the bilingual denomination. Grosjean (2015) proposes a definition focused on the use of languages in everyday situations. According to him, someone is bilingual or plurilingual as soon as he or she uses more than one language. This definition has the advantage of avoiding the proficiency matter and of being based exclusively on the use of language, which is easier to observe in someone's practices.

As the necessity of speaking more than one language has become clear for most people in Europe and around the world, the number of immersion projects has greatly increased in the past ten years. In Switzerland, most projects were implemented at high school or University level (from 16 years-old up) at the beginning. However, some new projects were recently implemented at the primary (4 to 12 years-old) and secondary (12 to 16 years-old) levels. The degree of immersion varies from one project to another but the two most immersive systems which could be experienced are: 1) the partial immersion (school program in which school disciplines are taught in the target language (TL). The number of periods in TL is defined in every project) and 2) two-way immersion (school program based on a usually balanced repartition of school disciplines between two or sometimes more languages. The presence of pupils of both linguistic communities allows interactions not only from teacher to pupil but also among the children themselves).

An important aspect of immersion projects is that the target language is not taught as a separate subject but it is assumed through contents of school disciplines. There are no hierarchies between language and content and both are central for the teaching. However, the emphasis is often given to the content, using the language mainly as transmission channel. In that sense, some authors insist on the difference between "foreign language instruction" identified in most schools around the world and "instruction in a foreign language" specific to the immersion context (cf. Steffen, 2013).

3. FiBi: a project concerning a bilingual section

In 2010, the city of Biel/Bienne launched the FiBi with two kindergarten classes (about 40 children 4-5 years-old) applying the model of two-way immersion. Le Pape Racine and colleagues (2010) explained that the classes will be set up with 50% of pupils with German as main language and by 50% of pupils with French as a main language. With the expression "main language" the authors mean the language in which the parents would have enrolled their kids if the FiBi project did not exist. Of course, according to the statistics of the city, approximately one third of those pupils also speak another language at home. The school discipline should also be taught half in French and half in German using the idea of "one person – one language" (1P/1L). In 2014, the project was evaluated and it was decided to continue the project until 6th grade (12 years-old) opening two new classes every year. In 2017, this project has more than 300 pupils aged 4 to 8 years-old.

4. Aim of the study

This article aims to verify the proficiency in the target language and the impact on mathematics results of the FiBi-pupils. Therefore, we hypothesize that the FiBi project has a significant impact on the L2 proficiency in general, and on the four communicative competences described by the Council of Europe (2001). In our view, having an important subject such as mathematics taught in another language does not significantly affect the assessment of the results.

4.1. Methodology

As the oral productive skills of FiBi-pupils aged 4 to 7 years-old were already tested (Buser, 2004), the main goal here was to test the general communicative competences of pupils aged 10 to 12 years old, including receptive and productive skills, in a written as well as in a spoken form. Although literature shows that bilingual education has no negative impact on non-linguistic disciplines, some fears remain and sceptical people sometimes may think that having a school subject taught in another language will strongly hinder the understanding of its content and hereby negatively affect the results in this discipline. To date, little is known about the true effect of two-way immersion on mathematics, especially in the specific context of Biel/Bienne. Consequently, we chose to emphasize the result in L2-Proficiency and in mathematics for the 8 to 12 year old pupils, a population that had not been tested yet. The four communicative competences described by the Council of Europe (2001) should enable us to get an overview of the L2-Proficiency of FiBi-pupils compared to students of similar ages from regular classes. The discipline of mathematics was chosen for various reasons: 1) it is an important discipline in terms of educational policies for example for a qualification at the end of 6th grade; 2) after comparison of the Swiss-French and Swiss-German educational policies for mathematics, similar goals were noticed; 3) every class taking part in the study has the same number of lessons of mathematics per week (5) and 4) short working instructions minimises the

effect of the language on understanding and this is an advantage as we aim to test the mathematics-competences especially.

4.2. Participants

This paper presents a comparative explorative study based on tests of competences of 65 children and on their answer to a closed-ended questionnaire, providing information about gender, age, citizenship and linguistic profile. All FiBi-pupils from 5th grade (n=41) were tested as well as 24 pupils from two regular classes of the same area and with similar composition (regarding socio-economic status and citizenship). The study sample (n=65) is summarised in Table 1.

Table 1. Overview of sample

Characteristic	FiBi	Regular classes	Total
Gender			
Masculine	16	17	33
Feminine	25	7	32
Total	**41**	**24**	**65**
Average age	10.59	10.88	10.735
Citizenship			
Swiss	15 (37%)	8 (33%)	23 (35%)
Swiss + other	10 (24%)	7 (29%)	17 (26%)
Other citizenship	16 (39%)	9 (38%)	25 (39%)
Total	**41**	**24**	**65**
Linguistic profiles			
Monolingual German-speaking	7 (17%)	7 (29%)	14 (22%)
Monolingual French-speaking	6 (15%)	9 (38%)	15 (23%)
Plurilingual German-speaking	4 (10%)	4 (16%)	8 (12%)
Plurilingual French-speaking	10 (24%)	3 (13%)	13 (20%)
Bilingual French-German	14 (34%)	1 (4%)	15 (23%)
Total	**41**	**24**	**65**
Languages spoken in all four classes	French, German, Spanish, Albanian, Turkish, Arabic, Italian, Croatian, Serbian, Bosnian, Portuguese, Tamil, Brazilian Portuguese, Vietnamese.		

Inclusion in the different linguistic profiles was determined depending on the answer to the four following items:

4.1. What language do you most often speak at home?
4.2. What language do you most often speak in your free time?
4.3. What language do you most often speak with your friends?
4.4. What language do you most often speak at school?
4.5. In what language do you feel most comfortable in general?

Concerning the language and mathematics tests, the study has considered the following elements: language tests were adapted and translated from Lenz and Studer (2014). Their large collection of language tests based on the Common European Framework of Reference for languages (CEFR) provides opportunity to evaluate the L2-Proficiency of young people according to the level A1 to C2 described by the Council of Europe (2001). The tests were established with the cooperation of more than 200 teachers and pretested in various contexts. The mathematics tests are based on tests developed by Humboldt-Universität Berlin (2013) aiming to evaluate the national level of 5th grade students in mathematics. After the comparison of the pedagogical objectives, some other exercises from the current official Swiss mathematics tools were chosen to complete the preparation of tests. Those were pretested twice on children of similar age in another region of Switzerland.

4.3. Analysis

The key variables for this study were the results in the mathematics test and in the language test. In order to use the variable "L2-Proficiency" we calculated the mean value of the four language tests (written comprehension, oral comprehension, written expression, oral expression). We then compared the results of the two groups (FiBi and standard classes) using Student *t*-Test. For the second question, we used again a Student *t*-Test to compare the results of the test in mathematics of the two groups. Then, we mixed the pupils of both groups and reorganized them into the already mentioned five linguistic profiles. We finally compared the results in mathematics and language tests of those groups using ANOVAs.

One limitation of this study is the small number of participants in the regular classes. In order to have a more representative sample, we would have needed more people chosen randomly in the 5th grades of the entire city. However, the two classes taking part in this study had similar characteristics as the FiBi population regarding the socio-economic status and the number of immigrants in the class. An additional limitation is the total of 65 children, which should be increased for this research in order to have a larger sample and allowing more stringent statistical results. However, the 41 participants of the FiBi-group are representative for this study as there were not any more children of that age involved in the project.

Thus, this data allows us to show a first examination of L2-Proficiency and mathematic competences resulting of the two-way immersion in Biel/Bienne, which will be expand in a further research.

5. Results

5.1. Differences in L2-Proficiency between FiBi and regular classes

The Student *t*-Test shows significant differences between the two groups in each communicative competence. The greatest difference is visible in the oral expression (3.50), then written expression (3.14), followed by written comprehension (0.97) and lastly oral comprehension (0.97). The value of *p* indicates very highly significant differences for all four comparisons.

Table 2. Results of the two groups in the four communicative competences out of a maximum of 7 points.

Competence	Result	Class	N	Mean	Difference	Sig. (*p*)
Comprehension	Written	Standard	24	2.08	0.97***	*p*<.001
		FiBi	41	3.05		
	Oral	Standard	24	1.83	0.90***	*p*<.001
		FiBi	41	2.73		
Expression	Written	Standard	24	1.42	3.14***	*p*<.001
		FiBi	41	4.56		
	Oral	Standard	24	2.33	3.50***	*p*<.001
		FiBi	41	5.83		
* significant difference (*p*<0.05) ** highly significant difference (*p*<0.01) *** very highly significant difference (*p*<0.001)						

5.2. Differences in mathematics between FiBi and regular classes

The results in the mathematic tests of both groups are not significant, as the value of *p* in the Student *t*-Test is higher than 0.05. The maximal number of points for this test was 54 thus the difference between the two groups is small. This result also reveals a slightly better result for the FiBi-group, which will not be further analysed because of the non-significant differences obtained.

Table 3. Results of the two groups in the mathematic test out of a maximum of 54 points.

Result	Class	N	Mean	Difference	Sig. (*p*)
Mathematics	Standard	24	25.10	2.41	.35
	FiBi	41	27.51		

5.3. Differences between the different linguistic profiles

As for the mathematic tests, no significant differences emerged of the ANOVAs used to compare the results of the five different linguistic profiles. However, the means shows that some groups had in general better results. For example in mathematics, the groups Monolingual German-speaking, Plurilingual German-speaking and Bilingual French-German obtained results higher than 26 points whereas the groups Monolingual French-speaking and Plurilingual French-speaking had less than 25. In L2-Proficiency, the same group (Monolingual French-speaking) had a lower result and two of the three groups with the best results in mathematics had more than 3.4 points out of a maximum of 7.

Table 4. Results in mathematics and L2 of pupils of different linguistic profiles.

	N	Mathematics (max = 54)			L2 (max = 7)		
		Mean	Minimum	Maximum	Mean	Minimum	Maximum
Monolingual German-speaking	14	30.50	13.50	45.00	3.02	.75	5.25
Monolingual French-speaking	15	24.13	8.50	43.00	2.38	.75	4.75
Plurilingual German-speaking	8	27.69	16.50	39.50	3.47	2.00	5.25
Plurilingual French-speaking	13	24.58	10.00	38.50	3.37	.75	5.00
Bilingual French-German	15	26.70	13.00	40.50	4.15	2.50	6.00
Total	65	26.62	8.50	45.00	3.26	.75	6.00
Sig. (Value of *p*)				*p* = .34			*p* = .28

6. Discussion and conclusion

The efficiency of the two-way immersion project to learn the L2 has been significantly confirmed through the findings of this research. The productive competences (writing and speaking) seem to have been the most enhanced skills as well as the receptive competences (reading and listening). The quite

similar results of both groups in mathematics test supports the hypothesis that learning a school-subject in immersion does not affect its comprehension and the acquisition of competences in that discipline. In this case, the FiBi-pupils even show slightly higher results, possibly indicating that immersion positively affects the learning of school subjects as the pupils have to translate, reflect and interact with the contents. This is in line with other studies (Coste, 2000 or Cavalli; 2005) although the results in both tests between the different linguistic profiles did not show any significant results. Thus, this finding should be interpreted with caution. The monolingual French-speaking group had lower results in mathematics as well as in L2 and this can lead us to different questions. For example, the additional difficulty for this group in learning a L2 may be the diglossia observable in Switzerland, which means the presence of the German language for formal situations and the presence of the very different dialect of Swiss-German for informal situations, largely used in non-official school situations. This represents an interesting topic that should be analysed in further research.

Implications for teachers, researchers and policy makers may be inferred out of these results. First, as many other recent works on bilingual schools, the outcome of this research encourages policy makers to start new immersion projects according to the local conditions. Already existing projects should be supported as an efficient tool for L2-Proficiency, one major goal of education in Switzerland. Bilingual education does not seem to have negative collateral effects on the learning of other school subjects, but this question should be researched in many more aspects in order to ensure a wider view of the linked questions. Finally, this paper is pointing the way to further research about bilingual education and a larger study following the same methodology and the same question has already been launched in order to collect more data in the specific context of Biel/Bienne. A qualitative analysis of the written and oral productions will give the opportunity to observe what succeeds by subjects with interesting linguistic profiles. There still are many challenges linked to immersion and bilingual education. and the FiBi-school is an on-going project. Results from further research will help consider new aspects before adapting existing projects or even opening new two-way immersion projects, as certain regions of Switzerland start thinking about following the example of Biel/Bienne. They finally should help policy-makers, researchers, teachers and parents to work together on the next French-German two-way Immersion project at secondary school level in Biel/Bienne.

References

Bialystok, E. (2001). *Bilingualism in development: Language, literacy, and cognition*. Cambridge: Cambridge University Press.
Buser, M. (2014). Deux plans d'études, une école: Scolarisation plurilingue dans la FiBi de Biel/Bienne. Une école publique basée sur le concept de l'enseignement par immersion réciproque. Portrait de la Filière Bilingue. *Enjeux Pédagogiques, 23,* 31-36.
Cavalli, M. (2005). *Education bilingue et plurilinguisme. Le cas du Val d'Aoste*. Paris: Didier.
Coste, D. (2000). Immersion, enseignement bilingue et construction des connaissances. In J. Duverger (Ed.), *Actualité de l'enseignement bilingue*, *Le français dans le monde* (pp. 86-94). Paris: Hachette.
Council of Europe (2001). *Common European Framework of Reference for Languages: learning, teaching, assessment.* Berlin : Langenscheidt.
Gaffino, D., & Lindegger, R. (2013). *Histoire de Bienne. Volume I. Des origines à 1815*. Baden: hier+jetzt.
Gajo, L. (2001). *Immersion, bilinguisme et interaction en classe*. Paris: Didier.
Humboldt-Universität Berlin. (2013). *Institut zur Qualitätsentwicklung im Bildungswesen.* Aufgabenpool VERA: https://www.iqb.hu-berlin.de/vera (12.10.2016).
Lenz, P., & Studer, T. (2014). *Lingualevel. Instrumente zur Evaluation von Fremdsprachenkompetenzen 5. Bis 9. Schuljahr.* Burgforf: Schulverlag Plus.
Le Pape Racine, C., Merkelbach C., Salzmann, C.-L., & Walther, P. (2010). *Konzept Filière Bilingue (FiBi) v1.0*. Biel/Bienne: Stadt Biel/Ville de Bienne.
Steffen, G. (2013). *Les disciplines dans l'enseignement bilingue. Apprentissages intégrés des savoirs disciplinaires*. Frankfurt am Main: Peter Lang.

SUPPORTING LEARNER AUTONOMY IN HIGHER EDUCATION

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Abstract

This paper presents examples of some innovative approaches to language learning in higher education. It explains how some of the elements that are typical for language coaching can be used in the specific teaching context of a post-graduate course in English for Specific Purposes to enhance language learner autonomy, providing empirical evidence from a pilot study. The core of the qualitative study lies in the analysis of interviews with learners who have completed the course. The new approaches are motivated by those of the author´s beliefs that are related to the so-called post-method concept in language teaching methodology and also connected with the conviction that autonomous students find it easier to learn the top soft skills that will be required from professionals in the 21st century, including critical thinking, creativity and emotional intelligence. The paper also outlines the design of the future action research that will draw on the collected empirical evidence and will include the analysis of observation and self-observation reports and learners´ goals, aiming at redesigning the course syllabus.

Keywords: Autonomy, higher education, language coaching, English for Specific Purposes, pilot study.

1. Introduction

Learner autonomy has been one of the key concepts in language learning for decades. It has been defined by many authors and researchers, the most frequently cited definition being the one Henri Holec provided in his report to the Council of Europe, describing learner autonomy as "the ability to take charge of one´s own learning" (Holec 1981, p. 3). Holec later elaborated on his own definition, stating that learner autonomy means "to take charge of one's learning is to have, and to hold, the responsibility for all the decisions concerning all aspects of this learning" (ibid). Little (n.d., online) explains that the reason why learner autonomy remains central to the educational concerns of the Council of Europe is that "one of the functions of (adult) education is to equip learners to play an active role in participatory democracy". He points out that "Holec´s definition entails that autonomous learners can freely apply their knowledge and skills outside the immediate context of learning" (ibid). This resonates with the key competences for lifelong learning as determined in the European Commission´s Recommendation (2006, online), which include learning to learn understood as "the ability to effectively manage one´s own learning", social and civic competences defined as "the ability to participate effectively and constructively in one's social and working life and engage in active and democratic participation, especially in increasingly diverse societies" – in addition to communication in the mother tongue and in a foreign language, and sense of initiative and entrepreneurship as the ability to turn ideas into action through creativity, innovation and risk taking as well as ability to plan and manage projects.

Undoubtedly, the key competences recommended by the EC can be perceived as preconditions for professional and personal success and prosperity, which are necessary for the development of a modern democratic society. It is also generally agreed that one of the essential 21st century skills is the mastery of the STEM disciplines. Interestingly and contrary to the widely spread opinion, Google´s Project Oxygen of 2013 showed the following characteristics of top employees: being a good coach; communicating and listening well; possessing insights into others (including others different values and points of view); having empathy toward and being supportive of one's colleagues; being a good critical thinker and problem solver; and being able to make connections across complex ideas. All of them are soft skills, and the widely believed importance of STEM expertise comes after them (see Strauss, 2017).

When examining the concept of learner autonomy together with the key competences and skills, it hardly takes much effort to see parallels with principles of coaching. John Whitmore, who drew on the foundations of coaching as laid by Timothy Galway, once a Harvard educationalist, and basically transferred coaching to Europe, says that people "need to know that their success is due to their own efforts" (Whitmore 2009, p. 19). He explains that "coaching is unlocking people´s potential to maximize their own performance. It is helping them to learn rather than teaching them." (ibid, p. 10). Whitmore

summarizes that "self-belief, self-motivation, choice, clarity, commitment, awareness, responsibility, and action are the products of coaching" (ibid, p. 39). He also emphasizes that when people can choose what to do, when learners can choose what to learn, it makes them feel responsible (see ibid, pp. 34 – 39).

In higher education, teachers and other professionals prepare young people for their future careers. Bearing in mind the necessity to internalise the lifelong learning concept, many educators strive to equip their students with the above mentioned skills and competences. Language teachers hold responsibility for developing their learners´ communicative competence in at least one foreign language, the role of a modern lingua franca being played by English. The frequently accentuated post-method approach to foreign language teaching gives teachers a lot of freedom and flexibility, but it also creates a large space for various types of challenges. Many language teachers are doing their best to respond to the rapidly changing world and students´ professional needs, looking for new approaches that could improve language learning and taking into consideration results of the latest research, including neuroscientific. Rachel Paling, a coach and a language teacher, explains that "language coaching transports elements and principles from the coaching world and integrates them into the language learning process" (Paling 2017, p. 61). Having explored the benefits of neuroscience for language learning, she has developed the concept of Neurolanguage Coaching, defining it as "the efficient and fast transfer of language knowledge with sustainable effects from the Language Coach to the Language Coachee facilitated by brain-based coaching and coaching principles as vehicles" (ibid, p. 62).

Ideally, language coaching is done on a one-to-one basis or in small groups. By presenting results of a pilot study for future action research, this paper aims to provide examples of how some elements of coaching can be applied to teaching English for Specific Purposes (ESP) in a specific higher education context to enhance learner autonomy. The research itself will be aimed at changes in syllabus design and methodology, namely for the purpose of an ESP course within a postgraduate programme at the Faculty of Electrical Engineering and Informatics of the University of Pardubice, Czech Republic. It is inspired by the author´s beliefs supported by the theoretical findings as presented above, and it is also motivated by suggestions for the potential areas of action research in the field of autonomy as proposed by Benson (2013). He argues that deeper insight would be welcomed into areas such as attention, reflection and metacognitive knowledge, pointing out that "control over the content of learning is one of the least well-research areas in the field of autonomy (ibid, p. 207).

2. Pilot empirical study

2.1. Context and methodology

A pilot empirical study was carried within a post-graduate course of English for Electrical Engineering and IT B2+ – C1 in the winter semester of the academic year 2017-2017. Purposeful and convenience sampling was applied to choose members of the study, the decisive criteria being a group of mature students with varied experience of different approaches to language learning/teaching in higher education, and freedom in course design and credit requirements from the teacher´s point of view. The main goals of the study were to verify the use of semi-structured interview as one of the data-collection research tools (including the verification of the research questions), and to determine a baseline for specific methodology in the following research stages. A practical aim was to find out whether the study will provide any empirical evidence justifying the transfer of principles and tools from the coaching world to the area of language learning in higher education in order to support leaner autonomy.

At the beginning of the course, on which the students had enrolled based on an electronic placement test, the learners were asked to reflect on their test results and to self-assess their competences for each of the communicative skills in English so that they could set individual learning goals for the semester. For this purpose, a helpful learner-autonomy supporting tool had been found to make the self-assessments and goals setting easier for the students, later also enabling them to record evidence of achieving their goals: the electronic version of the European Language Portfolio (ELP) registered as model No.2015.R012 and accredited by the Council of Europe. This part of the process was analogical to the Learning Cycle using an ePortfolio designed by Pospisilova (2017): ePlacement – Goal-Setting based on Self-Assessment – Mock Test – Goal-Resetting – ePortfolio – Final Exam as Integrative Assessment. In addition and in harmony with principles of coaching, the students were instructed to think of SMART goals (Specific, Measurable, Agreed/Attainable, Relevant/Realistic, Time phased; cf. Whitmore, 2009). Even at this initial part of the study, parallels could be observed between the Learning Cycle and the GROW coaching model suggested by Whitmore (Goal setting, Reality checking, Options and alternative strategies, What/When is to be done by Whom, cf. Whitmore, 2009). The students were informed that they would evaluate their own goals and the extent to which they managed to achieve them at an interview at the end of the semester as part of their exam.

In the progress of the course, the learners were asked to come up with partial goals for individual classes, each of which was conducted in a way similar to a coaching session. At the beginning of each class the students stated their goals, during the class they were working on achieving them (with the help of the teacher in the role of facilitator), and at the end of each class they were asked to evaluate their achievements. Bearing in mind the principles of coaching and brain-friendly approach, the teacher was asking open, powerful and probing questions to support the learners´ awareness of – above all – the current state of their knowledge and skills, language competence, positive learning experience and learning potential, and to foster a sense of responsibility for their own learning and achievements.[1]

2.2. Data collection and interpretation

The nature of the pilot study called for qualitative approach, therefore answers were sought to research questions. One principal question (PQ) and three sub-questions (SQ) were formulated as follows:

PQ: Can the use of principles of coaching in the learning/teaching process enhance language learner autonomy?

SQ1: What differences to their language learning process in general will the students perceive when exposed the new approach compared to traditional teaching?

SQ2: What will be the main aspects of the students´ language learning the new approach will influence?

SQ3: How can the students use the experience with the new approach in the future?

As mentioned above, the technique selected for the purpose of data collection in this pilot study was interview. Specifically, semi-structured interviews with guides were used, and the interviews, each lasting approximately 20 minutes, were recorded (with the consent of the interviewees). During the subsequent data analysis, the interview guides made it easier to code, interpret and analyse the data obtained from transcriptions in the form of summarizing interview protocols.

Six interview guides and recordings were analysed within this pilot study (eight students had registered for the course, but only six could be involved in the study as two did not complete it). The interpretation of the collected data can be summarized as follows:

SQ1: The main differences:
- freedom in choosing the learning content (R3, R5, R6);
- responsibility for one´s own learning (R2, R3, R4, R5, R6);
- more relevance to individual needs (R3, R4, R5).

SQ2: Influence on the following aspects:
- emotions (often negative in the beginning – *"it felt difficult, tricky, hard, I was angry":* R1, R3, R4, R5, R6, but positive in general or in the end – *"good, interesting, more fun, challenging":* R1, R2, R3, R4, R5, R6);
- motivation – *"I want/ed to..., I´d like to... I´m going to..."* (R1, R2, R3, R4);
- awareness – *"Maybe I have more trouble speaking in English than I thought."* (R1); *"I think my brain works like that." " The only thing I can do to improve my spoken interaction is talk."* (R3), *"It made me think about myself."* (R4), *"I am able to work to treat extent on my own."* (R5).

SQ3: Examples of using the experience in the future:
- working with SMART goals in future projects (at work or school – R3, R4, R5);
- setting relevant goals (R2, R3, R4);
- working with deadlines effectively – taking small steps (R3);
- setting SMART goals to learn new skills outside the context of formal learning (R6).

During the interviews themselves and particularly when analysing the interview guides and summarizing protocols, the interviewer observed both the usefulness and the power of one of the most important coach competences, namely active listening and its specific techniques such as summarising, paraphrasing, backtracking, and asking reflective and probing questions, which elicit answers based on critical thinking.

3. Results

The results of the pilot empirical study can be summarized in the form of answers to the research questions:

SQ1 – answer: Compared to traditional teaching, the students identified numerous differences. Above all, they perceived more responsibility for their own learning. They also felt more freedom and they found learning through the new approach more relevant to their own needs.

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[1] The teacher also made observation and self-observation reports as other research tools for the collection of data to be analysed in further research stages; another source of data analysis will be the students´ individual and specific goals for each of the five communicative skills. These will serve triangulation in the future research.

SQ2 – answer: The new approach had a generally positive influence above all on the affective domain of language learning (emotions, motivation, and also awareness) as a significant factor of the effectiveness of the learning/teaching process.

SQ3 – answer: When asked about how they can use the experience with the new approach, the students gave examples of future activities in their professional life (school or work) as well as personal life. In other words, they named transferable soft skills they obtained through the new approach.

As seen above, the answers to the sub-questions contain key words from definitions of learner autonomy and its interpretation in the requirements for essential competences and top skills for the 21st century. This implies the answer to the principal question:

PQ – answer: The use of principles of coaching in the learning/teaching process can enhance language learner autonomy.

4. Discussion

As explained above, this study represents an introduction to broader research into the theme of the enhancement of learner autonomy in higher education by means of the use of principles and tools of coaching. It has verified the use of semi-structured interview as a relevant research tool, showing where questions need to be added, modified or refined. Its results have provided some empirical evidence justifying the transfer of principles and tools from the coaching world to the area of language learning. Further research will follow with the aim to find out how exactly this can be done in order to change the course syllabus and ELT methodology. The study has also determined a baseline for the specification of methods for the future action research: more data will be analysed when collected from further interviews, class observation and teacher self-observation reports, and the statements of the learners´ goals and achievements (dossiers) in the electronic ELP model.

5. Conclusion

Graduates from higher education are expected to possess key competences for the 21st century and qualities predisposing them to become future leaders. As one of the fathers of coaching said, "leaders for the future need to have values and vision and to be authentic and agile, aligned and on purpose... Leaders of the future should be obliged to embark on their own journey of personal development to earn the title leader." (Whitmore 2009, p. 186). Supporting and developing autonomy in language learning and teaching can certainly help students become more autonomous and more authentic personalities. Adopting a coaching approach and applying principles and tools originally used for coaching seems to be desirable in order to help students acquire transferable soft skills valuable for their future professional as well as personal lives.

References

Benson, P. (2012). *Teaching and Researching Autonomy. Second Edition.* Abingdon: Routledge.
European Language Portfolio Model No.2015.R012. (n.d.). Retreived August 20, 2017, from URL https://www.coe.int/en/web/portfolio/accredited-and-registered-models-by-countrymodeles-accredites-ou-enregistres-par-pays#{"11839177":[5]}.
Holec, H. (1981). *Autonomy in Foreign Language Learning*. Oxford: Pergamon.
Little, D. Last (n.d.). Drawing together the threads of self-assessment, goal-setting and reflection. Retrieved May 30, 2017, from URL http://archive.ecml.at/mtp2/Elp_tt/Results/DM_layout/00_10/06/06%20Supplementary%20text.pdf.
Paling, R. (2017). *Neurolanguage Coaching. Brain Friendly Language Learning.* Gloucester: The Choir Press.
Pospisilova, L. (2017). Through Assessment and ePortfolio Towards Self-Directed Learning. In *Proceedings of the 16th European Conference on eLearning ECEL 2017* (pp. 439-445). Reading: ACPI Academic Publishing.
Strauss, V. (2017). The surprising thing Google learned about its employees – and what it means for today's students. Retrieved December 22, 2017, from URL https://www.washingtonpost.com/news/answer-sheet/wp/2017/12/20/the-surprising-thing-google-learned-about-its-employees-and-what-it-means-for-todays-students/?utm_term=.c37e07c91e1f&wpisrc=nl_sb_smartbrief.
Recommendation 2006/962/EC on key competences for lifelong learning. (2006). Retreived January 25, 2018, from URL http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Ac11090.
Whitmore, J. (2009). *Coaching for Performance. GROWing human potential and purpose. The principles and practice of coaching and leadership.* London: Nicholas Brealey Publishing.

"I'M NOT CUT OUT TO BE A TEACHER":
REFLECTIONS ON AN ENGLISH TEACHER TRAINING PROGRAM

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Abstract

This study investigates the reasons why many students in an English teacher training program in a Japanese university fail to complete it. It is usual for around one hundred students to enroll in the university's program in the first year. At the start of the second year, there are around sixty students. Forty remain in the program in the third year. At the end of the fourth year, only thirty students receive their license to teach English at the secondary school level. Of those thirty, only ten or even less than ten take up teaching posts in schools. For at least the last five years of the program, this has been the pattern. Although other universities with comparable programs report similar numbers abandoning courses of study, this seventy per cent rate of incompletion warrants investigation. At the outset, the students seem well motivated and eager for an English teaching career. What, then, accounts for so many not staying on the course until completion? To provide answers, I have conducted interviews and research over five academic years with first, second and third year students who have left the program. My paper analyzes and reports on the reasons these students give for leaving. I also give some recommendations on ways educators might enlighten student teachers on what to expect from teaching.

Keywords: Teacher training, teacher trainee, motivation.

1. Introduction

In Japan, university students can earn a teacher's license, enabling them to work as middle-school or high-school teachers. To earn the license, they must complete a series of classes and practical training activities known as a teacher training course in addition to the classes that the University requires all graduating students to complete. The specific type of license that they can earn depends on the school or graduate school to which they belong. In this paper, based on the teacher training curriculum of my university, I would like to report what they take from the teacher training course and shed light on the factors that lead to students' dropouts.

1.1. Number of students who enrolled in the program

In order to show the current trends in the teacher training course, I would like to share the data. Below are the tables which show the number of students who were enrolled in the teaching program over the five years ranging from 2013 to 2017.

Table 1. Students who entered university in April 2013.

	No. of students	% of those who remained
Entrants in their first year	102	-
Those who remained in their second year	72	71%
Those who remained in their third year	48	47%
Those who remained in their fourth year	35	34%
Those who actually became a teacher	10	10%

Apparently, for those who entered the teacher training course in 2013, by the time they became fourth-year students, about 70% of them had abandoned the course, and only about one-tenth of them became teachers. Even more noteworthy data is shown for the students who entered in 2014 below.

Table 2. Students who entered university in April 2014.

	No. of students	% of those who remained
Entrants in their first year	131	-
Those who remained in their second year	76	58%
Those who remained in their third year	43	33%
Those who remained in their fourth year	27	21%
Those who actually became a teacher	4	3%

For those students who joined the teacher training program in 2014, more than 40% of the entrants abandoned the course after one year. Moreover, only 4 out of 131 students became a teacher in the end.

Of course, various complex factors were intertwined when the students decided to drop out, or when they decided not to become a teacher even after completing the course. In this paper, based on questionnaires and interviews, I would like to give careful consideration to their reasons for dropping out.

1.2. Requirements to obtain a teaching certificate

In addition to all the necessary courses, students are required to complete two practical training sessions: a three-week practical placement training session, usually conducted when they are in their third grade, and a week-long training session for nursing for the elderly and disabled in their fourth grade. Such sessions are required in order to become licensed teachers in Japan.

1.2.1. Requirement to go for practical teaching. There are several requirements students have to meet in order to begin practical training at school.

A. Practical training entry requirements (up until two years prior to teaching practice at school):

1) Completion of "Principles of Education" class

2) Required English proficiency level is one of five tests as listed below. These test scores are to be achieved by the end of second year. Should students opt for practical training in their third year, the requirements need to be met by the end of first year. Listed below are the required test scores for the practical training sessions:

a) STEP 2nd grade and above,

b) TOEIC 450 and above,

c) TOEFL ITP 400 and above, or

d) TOEFL iBT 32 and above

B. Practical training start requirements to be taken up until one year prior to practical training at school:

1) Completed courses include: "English Teaching Methods I", "English Teaching Methods II", "English I", "English II", "English III", "English IV", "English V", "English VI", "English VII" and "English VIII".

2) Completed two or more courses from "Contemporary Theory of Teaching Profession", "Development and Learning", "Theories and Methods of Moral Education", "Theories of Extra-curricular Activity" and "Theories of Methods for Guidance and Career Guidance".

3) Completed two or more classes from "English Linguistics", "English Phonetics", "English Grammar" and "History of English and American Literature".

4) Achieved the required English proficiency level from one of the listed tests below:

a) STEP 2nd grade and above

b) TOEIC 450 and above

c) TOEFL ITP 450 and above, or

d) TOEFL iBT 45 and above

Details will be covered later in this paper; however, every year, there are some students who cannot meet some of these requirements (especially the English proficiency test) by the due date. Should they fail to achieve the necessary requirements, students are not allowed to continue to practical teaching practice.

2. Research

2.1. Research questions

The following three questions were formulated to explore the perceptions of those students who dropped out and those who completed the teacher training course:

(1) What characterizes the (initial) motivational disposition of the respondents?

Are they intrinsically, extrinsically or altruistically motivated?

(2) What demotivates teacher trainees?

(3) How did the respondents' attitudes and motivation change during the four years of training?

2.2. Participants

This longitudinal study at the university surveyed students of the 2013 and 2014 freshmen groups over five years, therefore the number of participants for this research varies depending on the year. Below is the detailed number of participants who responded at each stage.

2.3. Reasons to take teacher training course

When the teacher trainees entered the teacher training course in the first year, I asked 150 students of 233 their reasons to register for the course. I adapted the questions below (Table 3) based on FIT-Choice ("Factors Influencing Teaching Choice") framework developed by Watt & Richardson (2007). Respondents were told that they could select all applicable criteria.

Table 3. Reasons to take teacher training course.

Intrinsic Motivation	%
Like English	92
Inspired by my teacher(s) at school	64
Like to communicate in English	67
Have interests in foreign culture & people	75
Have interests in teaching	71
Teaching is to keep on learning	39
Travel / live abroad	76
Poor experience in my own education	22

Extrinsic Motivation	%
Recommended by my parents	40
Fallback career	43
Money	56
Fame	33
Have long holidays	61

Altruistic Motivation	%
Contribute to society	38

As the results clearly show, regarding intrinsic motivation, almost all the students liked English, and more than 70% of them were interested in foreign culture and people, and teaching, which I personally believe are the three essential qualities to be a teacher of English. Regarding extrinsic motivation, more than half of them chose money and having long holidays as reasons to choose the teaching occupation. However, unlike Sinclair's (2008) findings, their altruistic motivation was relatively low.

Some teacher trainees did not regard teaching as a lifelong career. Instead they regarded the teacher training course as a "life belt". They expressed that if they could not find a job other than teaching, they would consider becoming a teacher. Some regarded teaching as a fallback career or as a stepping-stone to other professions. Results show that respondents were affected by both intrinsic and extrinsic factors.

3. Things to keep in mind as a teacher

Whitaker (2004) suggests that teachers are the first and perhaps most important point of contact in a student's life. Despite the countless reforms, educational movements, and programs implemented to improve education, no other element can be as profound as the human element. He urges, "It's the people, not the programs" (Whitaker, 2004: 9).

Therefore, it is very important to know that teaching is a very responsible job. According to the Tribune Media Services (2013: 1), "Unless you have an open mind, a good sense of humor, patience and excellent people skills, teaching may not be your calling." Furthermore, Coombe and Barlow (2009: 1) mentioned that a teacher should have a 'calling' for the profession, possess appropriate professional knowledge, appreciable personal qualities, desired instructional effectiveness, be a good communicator, be street smart, willing to go the extra mile, be a lifelong learner and have excellent life outside the classroom. In addition, Azer (2005) shared some attributes of a good teacher as one committed to their

work, encourages and appreciates diversity, interacts and communicates respect, motivates students and co-workers, brings a wide range of skills and talents to teaching, demonstrates leadership in teaching, encourages an open and trusting learning environment, fosters critical thinking, encourages creative work, emphasizes teamwork, seeks continually to improve teaching skills and provides positive feedback.

Wentzel (1998) defined teacher support as providing emotional support to students, while Griffing (2006) defined teacher support as providing extra academic help and assisting students' personal concerns. Based on their studies, both of them concluded that the chemistry between a teacher and a student is essential for language learning and teaching as well. In addition, Griffing (2006) noted that when participants feel emotionally connected to their teachers, their motivation to learn increased.

According to Weinstein (1998; cited in Brown & Rogers, 2002: 153), as personality factors which were found to be the most important for English teachers are: being caring, empathetic, fair, respectful, fun, having a sense of humor, and a personal/unique style.

4. Conclusion

Ever since I started to teach Teaching Methods classes, I've been wondering why there were many students who dropped out before completing the course. Through this longitudinal study, I found various factors as reasons for that. These are generally categorized into six points: (1) suitability to be teachers; (2) other things to focus on; (3) workload; (4) self-ratings of English proficiency; (5) motivation; and (6) required English proficiency. Even considering that the reason(s) of each dropout is (are) different and multi-layered, I hope that what was found by this research helps would-be teachers and instructors to train these people to know what to expect.

For future research, I would like to consider whether there are gender differences regarding job satisfaction and turnover rate.

References

Azer, S. A. (2005). The Qualities of a Good Teacher: How Can They Be Acquired and Sustained. *Journal of the Royal Society of Medicine* 2005 February *98* (2): 67-69. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC10793

Bess, J. L. (Ed.) (1997). *Teaching well and liking it: Motivating faculty to teach effectively*. Baltimore and London: The Johns Hopkins University Press.

Brown, J. D., & Rogers, T. S. (2002). *Doing second language research.* Oxford, UK: Oxford University Press.

Coombe, C. & Barlow, L. (2009). 10 Characteristics of Highly Effective Teachers. A Journey into Learning. Retrieved from: http://tamasonline.com/index.php/2009/07/05/10

Dörnyei, Z., & Ushioda, E. (2011). *Teaching and Researching Motivation*. UK: Pearson Education Limited.

Gore, J., Holmes, K., Smith, M., & Fray, L. (2015). *Investigating the factors that influence the choice of teaching as a first career*. A Report commissioned by the Queensland College of Teachers. Retrieved from: http://qct.edu.au/pdf/research/WhyPeopleChooseTeachingLiteratureReview.pdf

Griffing, C. (2006). Student-Teacher Relationships: An Exploration of Student Motivation. *Counselor Education Master's Theses*. Paper 42. Retrieved from: http://digitalcommons.brockport.edu/edc_theses/42

Hayes, S. (1990). Students' reasons for entering the educational profession [Report No. ED366234]. Oklahoma: North Western Oklahoma State University.

Horwitz, E. K. (1996). Even teachers get the blues: Recognizing and alleviating language teachers' feelings of foreign language anxiety. In *Foreign Language Annuals*, *29*(3), 365-372.

Lynch, L, M. (2008). *Three critical problems in English language teaching and learning and what to do about them*. Retrieved from: http://Ezinearticles.com/?expert=Larry –M-Lynch

Sakai, H., & Kikuchi, K. (2009). An analysis of demotivatiors in the EFL classroom. *System, 37* (1), 57-69.

Tribune Media Services (2013). 5 Traits of Effective Teachers. Retrieved from: http://www.chicagotribune.com/classified/jobs/ Accessed: March 1, 2018.

Watt, H.M.G. & Richardson, P.W. (2007). Motivational factors influencing teaching as a career choice: Development and validation of the FIT-Choice Scale. *Journal of Experimental Education, 75* (3), 167-202.

Wentzel, K. R. (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. *Journal of Educational Psychology, 90* (2), 202–209.

Whitaker, T. (2004). What Great Principals Do Differently. Larchmont, NY: Eye On Education, Inc.

HOW TO BUILD A RESEARCH CULTURE AND ETHOS: FROM STUDENTS TO NOVICE RESEARCHERS

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Abstract

In this paper, we present the processes we follow in order to enhance and refine the links between Research and Teaching in Higher Education. The stepping-stones towards the creation of a more engaging research-led learning environment are showcased along with good practices for orienting students towards research. Fostering student-led research communities is a great challenge and requires innovative approaches. Here, we illustrate how the model we have established enhances students' autonomy, engages them in constructive research, and provides them with numerous transferable skills. Combining a novel perspective of curriculum design with the ongoing management of educational research, we explain how concrete and clearly identified steps (e.g. research ethics activities, student-driven coursework, dissertation projects, and targeted research seminars) can help students develop into early-stage researchers. We also introduce specific examples of how Project-based Learning (PBL) gradually prepares students to explore authentic research questions, deal with ethical issues, submit and present their work at International Conferences and publish their research findings. More significantly, we explore students' own perspectives towards this research culture, as those emerged in videos of students evaluating the above activities and their overall experience of the suggested practices and methods.

Keywords: Research, best-practices in higher education, skills and ethics, student engagement, PBL.

1. Introduction and background

The present paper aims to highlight the processes we have designed and complied with in order to ameliorate the links between Higher Education (HE), Research and Innovation, in a Department where we determined our priorities from the very beginning and came up with specific recommendations about how to, gradually yet steadily, create a Research Culture and Ethos; robust and student-centred learning, openness to up-to-date international developments, mobility via participation in international conferences, as well as a strong employability profile, were placed among our main priorities.

Viewing research as a central item in our agenda—both in our BA and MA programmes—we have attempted to build on students' prior learning, applying on an ongoing basis mechanisms related to research skills and ethics. Curricula elements and concrete actions have been put in place to ensure that the institutional, educational, infrastructure and ethical standards are fully met and maintained towards better engaging our students with research topics and practices, because "[w]hether researching into the commonly known, the commonly unknown or the totally unknown, the process may equally be labelled researching or learning: 'research is learning'" (Brew and Boud, 1995, p.267).

Faculty who wish to engage their university students in research should initially conduct a pilot activity, aiming to explore (or, in the best case scenario, verify) how and when their students get prepared to develop into autonomous researchers. Within this framework, and according to Willison and O'Regan's framework (2007), any research process involves six fundamental steps: i) generating and framing questions; ii) collecting information/data; iii) evaluating information; iv) organising it; v) analysing and synthesising information; and lastly, vi) communicating results. Inevitably, although the above list depicts the idealised sequence of research skills to be cultivated, their instruction may not be aligned fully with this order. Students, for instance, may have to be first exposed to secondary data or research questions that have already been explored, and then be called to perform the challenging task of formulating their own research questions and hypotheses.

While introducing students to contemporary research and its implications in HE, they need to be called to engage in research tasks in an explicitly articulated manner, via student-centred and flexible modes of teaching and assessment. Activities that encompass various research elements can be implemented in almost all postgraduate syllabi, delivery, learning outcomes, assessment methods—covering all phases of the research continuum described above. The most important facets of research investigation are "identical, with common processes being acted out across all research endeavours" (Willison, 2009, p.5), activating different skill types, of diverse level of difficulty in each occasion.

To this direction and taking as a case-study the MA in "Applied Linguistics with TESOL" offered by our English Studies Department, we have mapped the research components of its modules through a programme-level view and examined how they contribute to the above six areas associated with any research process; specific examples will be demonstrated in the following sections. The degree of complexity and rigor of each module component, together with its depth and scope of scholarship obviously varies depending on the topic under research each time. Yet, our aim is to share ideas as to how we can systematically and effectively encourage under- and post-graduate students to undertake research activities and produce research output, engaging them in real-life research projects.

2. Creating an engaging research-led learning environment

The enhancement of students' research skills and their involvement in research activities has attracted our interest since the establishment of the Department and its programmes. A systematic and coherent framework has been set up by the academic staff to initiate and incorporate such activities from the early stages of the postgraduate programmes up to the final stage of the Dissertation submission, namely the 'capstone' research project. Adopting fully a "students as researchers" pedagogic approach and reflecting consistently on our own practices, we have implemented strategies that successfully engage students with the research process—the majority of which proved to be fully aligned with the strategies and techniques proposed by the *Higher Education Academy* (Walkington, 2016).

To begin with, the first step taken was to define what 'research' signifies so that all stakeholders involved (i.e. both staff and students) can recognise and support the actions taken towards fostering a research-related culture. In this direction, at the beginning of each academic year, the **research strategy of the Department** is clearly identified, containing specific goals and actions that map onto the **Faculty and the University strategic plan**.

At the same time, the **Curriculum** itself as well as the so-called **Programme Specifications** (2014) must reflect 'research-led' requirements. This is mostly exhibited through research-based learning, through proposing and supervising dissertation topics that are applied and research-based, while the student work conducted carries elements of independent research or 'simulation activities.' Integrating research skills into formal Degree requirements, students experience research via hands-on-practice, and not merely in theory, from the very beginning of their experience. In the MA module **"Research Methods"** for instance, students are assessed on gaining those scientific research skills that will enable them to compile literature reviews, formulate research questions and hypotheses, evaluate various research methodologies and opt for the most appropriate one(s), but, most significantly, reflect on relevant ethical issues while collecting and analysing data from primary and secondary sources.

In addition, the complex issue of **research ethics** is mainly addressed by asking students to submit a 'mock Ethics Application Form' as part of their training and valuation in the Research Methods module assessment, also highly commented on in the University of Sheffield Research Ethics Committee Report (2017). As a result, even before students need to apply for research ethics approval for their Dissertation when human participants are involved, the process and implications have already been successfully embedded into their curriculum. Furthermore, student research that has been completed, returns to the Department as graduates are invited to present their **research findings to the next cohort(s)** managing not only to inspire future research projects—as students themselves confess, but also to help current students improve their work by being exposed to fully-fledged projects.

Another key strategy aiming at enhancing student engagement with the research portfolio is the **'co-creation' of a research environment and culture**, bringing together students and staff alike. More precisely, we tend to regularly organise events and seminars specifically targeted at research topics, for example, how to write and publish a research paper, how to act as a reviewer of submitted papers in conferences and journals, or invite them to participate in Young Researchers' conferences organised by our Institution which cultivate and grow students' expectations to be further involved in research conducted. The intended research atmosphere is also strengthened by opening up student placements in **research groups and internships** working on projects within the Department. Introducing students to the staff research experience and interests is also beneficial in that it motivates students to "interview staff about their research, [leading] to greater **dialogue between staff and students** and more realistic student expectations about staff commitments" (Walkington, 2016, p.5).

Apart from the learning environment built around best practices for orienting students towards research, for students to delve further into the research process it is extremely significant to be aware of the **employability benefits** that derive from research activities. That is to say, academic staff need to explicitly present to students why research skills constitute an integral part of most employment options, so that they realise themselves the utmost significance of improving their critical thinking capacity and gradually acquire a researcher's mindset. More precisely, the University of Sheffield, UK has generated a set of clearly-identified 'attributes,' a list of features that all graduates should possess after being offered the opportunity to practise them during their studies (The University of Sheffield, 2005). Being committed to supporting student development (both through curricular and extra-curricular activities that the Department offers to its students), we aim at a **Sheffield Master's Graduate** who is able to:

SGA1. Increase their subject knowledge and, where relevant, **professional expertise**.

SGA2. Recognise, take account of and integrate new **developments in their subject** or professional practice.

SGA3. Enhance their ability to **analyse complex subject** matter, issues or questions and use evidence to understand and explore innovative approaches to problems.

SGA4. Gain advanced skills in using, and potentially developing, the **research methodologies** of their subject or professional field.

SGA5. Work in keeping with the **ethical considerations and requirements** for academic and, where relevant, professional expertise.

SGA6. Work **independently** and develop confidence and **capability in making decisions** with authority.

SGA7. **Work well with others**, with appropriate awareness and sensitivity to differences and commonalities.

SGA8. **Communicate** processes and outcomes to a range of **audiences**.

SGA9. Work efficiently and effectively to **tight deadlines**.

SGA10. Increase their knowledge and application of **appropriate technologies**.

SGA11. Learn with **a network of peers** from diverse backgrounds who share their enthusiasm for the subject or dedication to the same professional field.

SGA12. Gain an in-depth **appreciation of the boundaries of their subject** and understanding of how it relates to other fields or professions.

SGA13. **Apply** their subject or professional knowledge and skills to new settings, contexts and challenges **beyond their studies**: to make a difference in the world.

As one may realise, all the above attributes (some directly and others indirectly) are interwoven with research and the skills this necessitates. As a result, they were seriously taken into consideration while compiling the Department's MA Programme Specifications, so as to 'deliver' back to the society a graduate who will be confidently equipped with the above profile.

Undoubtedly, a key stepping-stone in transforming postgraduate students into novice researchers is also to assist them in various ways in **publishing their research** before they complete their programme of studies, or immediately afterwards. Experience in HE demonstrates, though, that students hesitate to disseminate their work and findings; therefore, a solution to their reluctance is to encourage '**co-production' of research** with staff members, supervisors or their peers, and actually help consider the possibility of joint publications before leaving the institution. Certainly, such an accomplishment (instantiated as a Conference presentation, a paper in Proceedings, a Poster session, or even a Journal article and book chapter in rare cases) requires some kind of 'celebration' on the part of Department. This is why achievements which involve research output are highlighted and promoted by being made publicly known to all members of the Faculty community. Such an approach constitutes an attempt not only to disseminate new findings, but also to celebrate student research, through social media posts, the institutional Newsletter (the 'Highlights'), exhibitions, poster sessions, video clips etc.

3. Project-based learning in the master's curriculum

Having showcased a range of strategies employed towards the creation and maintenance of an engaging research-led academic community, a teaching and learning model favoured a lot in our Department will be now introduced, as it fosters student engagement in the learning process and students cultivate both academic and transferable skills: the model popularly referred to as the *Project-based Learning* (PBL), pioneered by Kilpatrick (1918) as the *Project Method*. PBL is an innovative approach to learning and instruction that "teaches a multitude of strategies critical for success in the twenty-first century" (Bell, 2010, p. 39). Focusing the learning experience on projects engendering a purposeful activity, PBL makes students intrinsically motivated to strive for the highest quality. As a result, it assists them in reflecting on their knowledge, moving from gleaning new skills to becoming autonomous researchers, competent communicators and advanced problem solvers.

In this section, taking as a starting point of reference the Postgraduate module 'Corpora in Applied Linguistics' (CAL), we will demonstrate how the PBL approach can be employed within any

module where student involvement is considered to be an essential aspect of meaningful learning. In this module, students are required to compile a project of 3,000 words which consists of a brief literature background, the theoretical grounding, real research execution, presentation and analysis of authentic findings, as well as suggestions for future developments and research. In juxtaposition with other types of academic coursework, this specific piece of assessment captures all the unique characteristics of PBL that enhance the development of academic and transferable skills. The Project incorporated in CAL enhances and assesses the set of five criteria for a genuine PBL project, as defined by Thomas (2000): namely, centrality, a driving question, constructive investigations, autonomy, and realism. More precisely:

a)   For the needs of the 'Corpora in Applied Linguistics' (CAL) project, students become involved in a constructive investigation. The approach adopted in this MA module is built on a goal-directed process, which encompasses various transferable skills; postgraduate students need to design from zero point a fully-developed project, based on continuous decision-making throughout its implementation, as well as problem-solving depending on the difficulties or technical/practical issues they may encounter during data collection or the use of specialised software tools they select. As Bereiter and Scardamalia (1999) rightly point out, a defining property of PBL is that "the central activities of the project must involve the transformation and construction of knowledge", leading to the acquisition and generation of new knowledge by students. The CAL project under examination meets fully this criterion, since among the central activities of the project students are called to:

● formulate a research question relevant to a field of Applied Linguistics or TESOL;
● construct a critical literature review related to the specific research question examined;
● describe and discuss in depth the methodological decisions taken;
● conduct a thoughtful interpretation of the findings they yield; and, lastly,
● apply an effective and consistent time management towards the completion of their Project.

b)   The project itself is central, and not peripheral, to the Curriculum. Students encounter and absorb the central concepts and key constructs of *Corpus Linguistics*. Being requested to provide a project plan and receive additional guidance and feedback, their project is crafted in such a manner that it literally drives students to address central concepts and principles of their discipline.

c)   PBL is focused on specific discipline-based questions. No uniform topic is provided by the module leader; instead, each student must set up a project based on a challenging question that will help them deal with the central issues addressed in the specific field of study, i.e. *Corpus Linguistics* or *Corpora in English Language Teaching*.

d)   PBL projects are also student-driven to a significant degree; among their main advantages of our CAL project is that it does not have a predetermined outcome or pre-identified paths students should follow in order to reach the project's completion. Due to the autonomous nature of the procedures that students follow, they themselves undertake the responsibility as they need to delve into coherent and unsupervised work over an extended period of time, until they reach and present their findings.

e)   And most significantly, PBL is realistic and genuine. Therefore, the CAL project does not constitute one more simulation activity, but, rather, it embodies characteristics that infuse students with a feeling of authenticity and a clear sense of belonging.

The 'Students as researchers' active pedagogy favours inquiry, and may take multiple forms which can promote research-teaching associations in any discipline. The applicability and generality of this approach lies in that any lecturer can become a 'PBL teacher' regardless of any conceptual or disciplinary differences in the scope of the projects supervised. The bottom line remains exactly the same: all highly-individualised PBL projects may engage powerfully students (with a wealth of examples of this practice encountered in Healey and Jenkins, 2009; Healey et al., 2013; as well as Hodge et al., 2011). Feeling intrigued by complex tasks and challenging questions, students work on solving problems and making decisions, which further enhance their academic, research and employability profile. According to Jones, Rasmussen and Moffitt (1997), as well as research on PBL conducted by Thomas, Mergendoller and Michaelson (1999), PBL both as a type of Coursework and academic exercise engages students in research, creating a research culture and the necessary research-related ethos.

i)   First of all, projects of this type help students develop their inquiry, reflective, decision-making, and problem-solving skills, while they also have the opportunity to develop their interpretative capacity, as well as their summarising skills by constructing a concise summary of the research activity. This instructional approach generates assessments which do not demand from students to memorise scholars' ideas or facts; consequently, students' own competence and confidence in higher-order thinking skills improve (McDonald, 2014).

ii)   This project constitutes the central teaching strategy of the module, as students—apart from building their knowledge—are also exposed to the benefits of having a PBL experience. Evidently, projects of this type offer students the unique opportunity of being provided with constant formative feedback (Black and Wiliam, 1998; Izard, 2004), apart from the end-of-module assessment and feedback.

iii)   Students are allowed to select their own topics and focus on personal areas of interest (upon receipt of an initial approval by the module leader) and have to deal with a complex and challenging task, based on a question or problem they identify to serve a specific research purpose.

iv)   It goes without saying that a PBL project enhances student autonomy, increases the unsupervised work time, and the full project responsibility lies with the students. Such a project also prepares graduates towards the management of a real-life project, also enhancing their time management skills.

v)   As a result, students with this project undertake the role of an active researcher, employing existing software tools (corpus linguistics software, statistics tools, etc in this case), while the projects culminate in realistic products that can be submitted and presented at conferences to actual research communities. Equally important is that the criteria by which their research outcome is judged are those which apply to authentic research projects aimed at academic presentations or journal articles.

4. Conclusions

Having first determined our Departmental research identity and strategy, we have designed and consistently followed the afore-mentioned actions, in order to create a research culture and the closely-associated ethos. Following Gordon's (1998) distinction between "academic challenges, scenario challenges, and real-life challenges," we strongly believe that our approach to research and PBL addresses real-life challenges in a coherent and robust manner, emphasising authentic research questions, ensuring that equal opportunities are offered to all students and graduates, so that they can meet the module and programme learning outcomes. But how do students themselves feel about having been involved in this research exploration, and how constructive has it been for them? Students' own perspectives towards this research culture and the corresponding research output in the past academic years will be presented during the conference presentation via video projection. Yet, our next research goal is to design and conduct a more quantified study with the use of questionnaires and interviews, in order to explore in detail and depth students' perspective about the above activities, as well as their overall experience in relation to the suggested practices and methods.

References

Bell, S. (2010). Project-Based Learning for the 21st Century: Skills for the Future. *The Clearing House*, *83*(2), 39-43.

Bereiter, C., & Scardamalia, M. (1999). *Process and Product in PBL Research*. Toronto: Ontario Institutes for Studies in Education/University of Toronto.

Black, P., & Wiliam, D. (1998). Assessment and Classroom Learning. *Assessment in Education*, *5*, 7-74.

Brew A., & Boud, D. (1995). Teaching and research: Establishing the vital link with learning, *Higher Education*, *29*, 261-273.

English Studies Department. (2014). Programme Specifications, University of Sheffield. Retrieved March 20, 2018 from http://www.progspecs.group.shef.ac.uk/0910specs/cest01.doc

Gordon, R. (1998). Balancing real-world problems with real-world results. *Phi Delta Kappan*, *79*, 390-393.

Izard, J.F. (2004, March). *Best Practice in Assessment for Learning*. Paper presented at 3rd Conference of The Association of Commonwealth Examinations and Accreditation Bodies (ACEAB), Nadi, Fiji.

Jones, B.F., Rasmussen, C.M., & Moffitt, M.C. (1997). *Real-life problem solving: A collaborative approach to interdisciplinary learning*. Washington, DC: American Psychological Association.

Kilpatrick, W.H. (1918). The project method, *Teachers College Record*, *19*, 319-335.

McDonald, B. (2014, May). *Self Assessment and Project-Based Learning*. Paper presented at the International Association for Educational Assessment (IAEA), Singapore.

The University of Sheffield. (2005). The Sheffield Graduate. Retrieved March 20, 2018, from http://www.sheffield.ac.uk/sheffieldgraduate/studentattributes

Thomas, J.W. (2000). A Review of Research on Project-Based Learning. Retrieved March 20, 2018, from http://www.bie.org/object/document/a_review_of_research_on_project_based_learning

Thomas, J.W., Mergendoller, J.R., & Michaelson, A. (1999). *Project-based learning: A handbook for middle and high school teachers*. Novato, CA: The Buck Institute for Education.

Walkington, H. (2016). *Engaging Students in Research*. York, UK: Higher Education Academy.

Willison, J., & O'Regan, K. (2007). Commonly known, commonly not known, totally unknown: A framework for students becoming researchers, *Higher Education Research & Development*, *26*(4), 393-409.

Willison, J. (2009). *Handbook for Research Skill Development and Assessment in the Curriculum*. Adelaide: The University of Adelaide.

SOCIAL NETWORKS AS NEW PLACES FOR INFORMAL LEARNING: A GROUNDED THEORY ANALYSIS IN HIGHER EDUCATION STUDENTS COMMUNITIES

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Abstract

Facebook has been recognized as one of the most used tools in supporting undergraduates' informal learning (Akcaoglu & Bowman, 2016). Furthermore, students seem to prefer Facebook rather than the E-Learning tool provided by their University to achieve their learning goals (Eger, 2015). Although Social Networks (SN) have been recognised as fertile environments for informal learning (Mao, 2014), especially in encouraging knowledge exchange (Forkosh-Baruch & Hershkovitz, 2012), the empirical research activity about this topic is still lacking (Sackey, Nguyen, & Grabill, 2015). This study aims to explore the undergraduates' point of view on the informal learning processes, which take place on SN. The main research questions are as follows: 1) how do undergraduates use SN for supporting learning activities? 2) How do students leverage these resources? 3) Which are the social dynamics and roles involved in these informal learning communities? 34 members of 13 Facebook groups (FBG) have been involved. The participants were recruited posting an informal invitation on several Italian undergraduates FG. The students were interviewed with a semi-structured questionnaire that was developed according to the indications of Patton (2002). The data analysis followed a grounded theory approach (Charmaz, 2014) in order to maintain a strict adherence between students' voices and results. The analysis also included the use of Nvivo 11 (qualitative data analysis software). Results suggest that undergraduates create communities for "help matters"; the aid can be addressed to themselves or other people. In both cases, the FG creation could represent the best compromise to face a new university path. Students mainly use online communities to know each other, exchange textbooks, make decisions together or share learning materials. Online activities are often regulated by norms, which may be explicit or implicit. The crucial role of these informal learning environments is covered by the admin, who create, manage, and support the communities of students. Furthermore, several roles seem to emerge, like the co-workers, the lurkers and the information' guarantors, and the providers. The majority of participants recognises the key role of these informal groups for their own university path, especially for creating networks and gathering information (or learning materials); all of these information are mediated by the user-friendliness of the tool. These results might suggest new ways to improve students' learning; official communications between university and students could be easier on SN.

Keywords: Educational technologies, social network, higher education, grounded theory, informal learning.

1. Introduction

In the last two decades, the education sector has been strongly influenced by the advent of the internet and its related services (i.e. websites, blog, social network, e-mail etc.) (Banica, Burtescu, & Enescu, 2017). Within the framework of this educational innovation process, university students have been actively involved (Tess, 2013); on the one hand, universities have been implementing ICT platforms and tools for supporting instructional activities, on the other hand, students autonomously organize their routines following the Social Media (SM) technological development and testing and using the new SM platforms or features to support their studying and learning activities even without teachers' recommendations (Anderson, Boyles, & Rainie, 2012). The usefulness of SM seems not to be restricted to the formal learning; in fact they are also used by the higher education students to support informal learning activities, allowing collaborative learning processes and knowledge exchange (Alwi, Mahir, & Ismail, 2014; Forkosh-Baruch & Hershkovitz, 2012). Indeed, according to Akcaoglu & Bowman (2016), Facebook is currently one of the most used tools in supporting undergraduates' informal learning

and students seem to prefer this social network rather than the E-Learning tool provided by their University to achieve their learning goals (Eger, 2015). Furthermore, it has been recognised as useful in supporting the future students' professional careers (Pérez, Araiza, & Doerfer, 2013). Despite Social Networks (SN) have been recognised as powerful tools for informal learning (Mao, 2014), the empirical research activity about this topic is still lacking (Sackey, Nguyen, & Grabill, 2015). Few studies have been conducted to understand how students autonomously use the SN in order to support their learning paths and the dynamics that allow informal learning within the university students' SN communities are not yet clear. Therefore, the aim of this study is to explore the informal learning processes that take place within the SN environment through the undergraduates' point of view. This could bring out useful elements to enhance institutional university e-learning platforms and teachers' instructional practices. This work represents the exploratory part of a wider research project that aims to discover if and how undergraduate students' learning processes could be better fostered integrating social network features e-learning platforms already implemented in Universities.

2. Research context: the Univr students' Facebook groups

The University of Verona (Univr) is an Italian higher education institution that counts about 21000 students (UNIVR, 2018a) and about 40 courses (UNIVR, 2018b). Although the Univr implemented an e-learning platform to foster the instructional practices and the students' learning activities, it is possible to find a lot of Facebook groups, created by students and centred on specific Univr courses. The Facebook Group (FBG) is one of the many functions of Facebook. It is a virtual place focused on a specific topic, accessible by the general FB account. Membership can be selected and restricted by the admin of the group, who is a FB user with special authorities (he/she is often the group creator also) who manage and led the FBG interactions and activities. Undergraduate students often use this FB feature, and they consider it as useful in supporting learning activities (Eger, 2015; Tower, Latimer, & Hewitt, 2014). For these reasons, we think that the FBGs autonomously created by Univr' students could be a proper context for gathering data in order to understand the informal learning processes that take place on SN. Therefore, the participants were involved in this study by posting a message with a request for participation in the Univr' students Facebook groups. The students who answered the invitation were interviewed after being adequately informed about the research aims.

3. Research questions and methodology

As previously mentioned, the many Higher education institutions, like Univr, have been implementing ICT infrastructures like e-learning platforms to support didactic activities. The starting point of this contribution is that a better understanding of learning processes that take place in SN could be useful for improving the design of formal online activities in higher education. On this basis, the main research questions are as follows.
- How do undergraduates use SN for supporting learning activities?
- How do students leverage these resources?
- Which are the social dynamics and roles involved in these informal learning communities?

In order to answer the proposed research questions, the Grounded Theory approach was used. This decision was made to maintaining the emerging theory grounded in data (Charmaz, 2014) and because the GT allows to "give voice" to the experiences of students involved in this study (Mortari, 2007). Furthermore, GT has been previously employed in several studies to enhance the participants experience and to actively involve them in the research process (Tacconi, 2011; Tacconi & Gomez, 2010). The analysis also included the use of Nvivo 11 (qualitative data analysis software). The next sections illustrate the data collection and the data analysis step by step.

3.1. Subjects involved and data collection

34 members of 13 FBG have been involved. The FBGs are not officially connected with the official e-learning platforms of university students, but they are focused on them. Most of the participants were enrolled at the Univr, or they just graduated. Two students who respectively belong to the Polytechnic of Turin and to the Polytechnic of Milan were also included because they asked to participate after they had been made aware of the research project. The students were interviewed with a semi-structured track questionnaire to maintain the focus on the research questions (Mortari, 2007; Tacconi, 2011). The interview track was developed according to the indications of Patton (2002), and the questions were revised and corrected after each interview with the aim to improve the quality of the investigation, following the principles suggested by the GT (Charmaz, 2014). The interviews were audio recorded and then transcribed. Each interview and each answer was marked using a progressive code (e.g. [INT7/12] identifies the twelfth questions of the seventh interview). After the database organisation, a recursive GT analysis was performed as set out below.

3.2. First phase analysis – open coding

The open coding, the first phase provided by the GT analysis procedure, required a recursive read of the interviews. The significant narratives were identified and labelled following the research focus (the experiences of undergraduates about the autonomous use of SN for supporting their learning activities). Narratives were then compared, unified, and conceptualized (see, for instance, Table 1). Thanks to this procedure, the provisional subcategories were laid out.

Table 1. Example of open coding.

Subcategories	Narratives
Doing opinion polls, debating, making decisions together	We created a survey […] and we solved the issue by the majority. [INT3/14] If a problem occurs, we usually solve it by writing on Telegram group. Someone explain the problem, the others give their opinion and then, with the aid of students' representatives, we try to fix the situation. [INT16/12]. Writing on the Facebook Group is a way to point out all the negative things which occur at the university. [INT17/19].

3.3. Second phase analysis – axial coding

Through the axial coding procedure, the subcategories identified in the first phase were reviewed, grouped, and recursively compared with the collected data. Thanks to this action, XXX higher level categories have been identified and conceptualised. At the end of the procedure, a provisional hierarchy inductively emerged. Table 2 shows the composition of categories: in the left-hand column, the names of categories are reported, while in the right-hand column there are the subcategories from which it emerged.

Table 2. Emerged categories' overview.

Categories	Subcategories
Creating a students' community for "help matters" [A]	Addressing the aid to themselves [A1] Addressing the aid to the colleagues [A2]
Managing a students' community [B]	Drawing up a regulation and ensuring compliance [B1] Keeping the focus on university [B2] Regulating community behaviour [B3]
Joining students' communities [C]	Becoming aware of students' communities by word-of-mouth [C1] Becoming aware of students' communities by personal investigation [C2]
Using communities in students' life [D]	Gathering general information and keeping up with own degree courses [D1] Knowing each other and creating a personal network [D2] Buying and selling second-hand books [D3] Exchanging learning material [D4] Doing opinion polls, debating, making decisions together [D5] Exchanging tips about university examinations [D6] Exchanging personal perception about experiences about professors [D7]
Being part of students communities' [E]	Being active members [E1] Being lurkers [E2] Becoming providers [E3] Becoming guarantors [E4]
Relying on students communities' [F]	Trusting the communities' members: we're in this together. [F1] Trusting providers and guarantors only [F2]

3.4. Third phase analysis – selective coding

Once the hierarchization of the categories has been outlined, this structure and its connections have been reviewed and validated through the procedure of selective coding, which involves a recursive return on the texts of interviews and the memos written by the researchers during the data gathering and the analysis. The selective coding procedure outlined a provisional theoretical model about the students' informal learning in SN, which has been synthesised in figure 1.

Figure 1. The provisional theoretical model emerged.
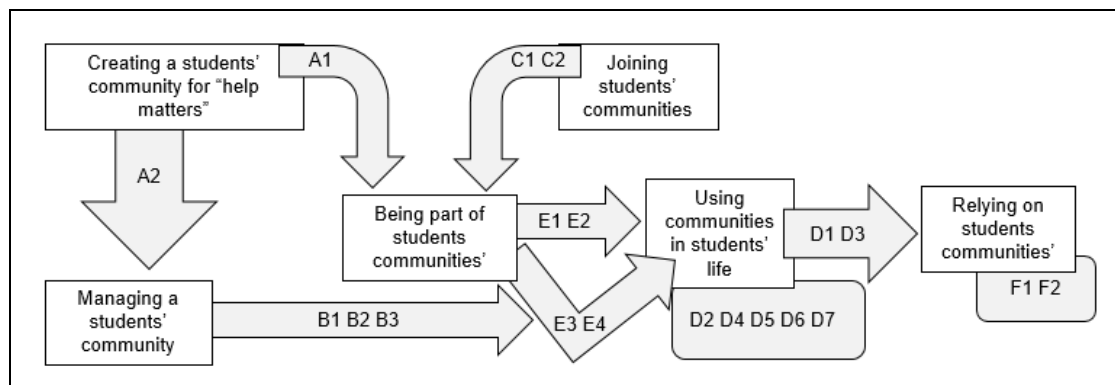
4. Discussion

The emerged model and its elements were compared to literature. Results suggest that undergraduates create communities for "help matters"; the aid can be addressed to themselves or other people. In both cases, the FG creation could represent the best compromise to face a new university path. Wodzicki, Schwämmlein, and Moskaliuk (2012) found that students' communities are frequently used by freshmen, especially to create a social network and to receive tips about the new university environment. As with the participants of this research (both admins and members), this motivates them to create and join communities. Regarding becoming aware of communities, Sharma, Joshi, and Sharma (2016) found that the perceived usefulness is an important indicator which predicts the use of that tools in higher education learning. Likewise, the study' participants search for students' communities because they know how important these groups could be for their university path. Furthermore, this is mediated by the user-friendliness of the tool. Students mainly use online communities to know each other, exchange textbooks, make decisions together or share learning materials. Moreover, communities are used for sharing daily experiences with academics and professors. These results are close with similar Selwyn's study (2009) which identifies in students' posts the exchange of logistical or factual information about teaching and assessment requirements, instances of supplication, and moral support with regards to assessment or learning. The students' activities, which take place in the online community, are often regulated by norms, which may be explicit or implicit. The key role of these informal learning environments is covered by the admin, who create, manage, and support the communities of students. Furthermore, several roles seem to emerge, like the co-workers, the lurkers and the information' guarantors, and the providers. The last two roles are often covered by admins, but simple members could carry out these functions too. The most students who trust communities use them in their university life becoming active members. Vice versa, who does not rely very much on these informal groups will tend to be a lurker, restricting the participation according to his self-interest.

5. Conclusions

The elements emerged from the results (reported in Table 2 and Figure 1) might suggest new actions to improve higher education institutional e-learning platforms and to enhance communications between university teachers and students. Furthermore, the provisional theoretical model provides interesting information about informal learning dynamics that take place in an online environment. Nevertheless, the theoretical saturation of the model has not been reached and the definition of students' roles needs to be further investigated through a cross-case comparison. As mentioned before, the present contribution represents the first step of a wider research project and for all these reasons a return to the field for a further data gathering is necessary.

References

Akcaoglu, M., & Bowman, N. D. (2016). Using instructor-led Facebook groups to enhance students' perceptions of course content. Computers in Human Behavior, 65, 582–590. https://doi.org/10.1016/j.chb.2016.05.029

Alwi, N. H. M., Mahir, N. A., & Ismail, S. (2014). Infusing Social Media in Teaching and Learning (TnL) at Tertiary Institutions: A Case of Effective Communication in Universiti Sains Islam Malaysia (USIM). Procedia - Social and Behavioral Sciences, 155(October), 265–270. https://doi.org/10.1016/j.sbspro.2014.10.290

Anderson, J., Boyles, J. L., & Rainie, L. (2012). The future impact of the Internet on higher education, 10(6), 341–350.

Banica, L., Burtescu, E., & Enescu, F. (2017). the Impact of Internet-of-Things in Higher Education. Scientific Bulletin-Economic Sciences, 16(1), 53–59.

Charmaz, K. (2014). Constructing grounded theory. Sage.

Eger, L. (2015). Is Facebook a Similar Learning Tool for University Students as LMS? Procedia - Social and Behavioral Sciences, 203, 233–238. https://doi.org/10.1016/j.sbspro.2015.08.287

Forkosh-Baruch, A., & Hershkovitz, A. (2012). A case study of Israeli higher-education institutes sharing scholarly information with the community via social networks. Internet and Higher Education, 15(1), 58–68. https://doi.org/10.1016/j.iheduc.2011.08.003

Mao, J. (2014). Social media for learning: A mixed methods study on high school students' technology affordances and perspectives. Computers in Human Behavior, 33, 213–223. https://doi.org/10.1016/j.chb.2014.01.002

Mortari, L. (2007). Cultura della ricerca e pedagogia. Roma: Carocci editore.

Patton, M. Q. (2002). Qualitative research & Evaluation Methods - 3rd ed. Thousand Oaks, California: Sage Publications, Inc.

Pérez, T., Araiza, M. D. J., & Doerfer, C. (2013). Using Facebook for Learning: A Case Study on the Perception of Students in Higher Education. Procedia - Social and Behavioral Sciences, 106, 3259–3267. https://doi.org/10.1016/j.sbspro.2013.12.375

Sackey, D. J., Nguyen, M. T., & Grabill, J. T. (2015). Constructing learning spaces: What we can learn from studies of informal learning online. Computers and Composition, 35, 112–124. https://doi.org/10.1016/j.compcom.2015.01.004

Selwyn, N. (2009). Faceworking: Exploring students' education-related use of Facebook. Learning, Media and Technology, 34(2), 157–174. https://doi.org/10.1080/17439880902923622

Sharma, S. K., Joshi, A., & Sharma, H. (2016). A multi-analytical approach to predict the Facebook usage in higher education. Computers in Human Behavior, 55, 340–353. https://doi.org/10.1016/j.chb.2015.09.020

Tacconi, G. (2011). La didattica al lavoro. Analisi delle pratiche educative nell'istruzione e formazione professionale. Milano: Franco Angeli.

Tacconi, G., & Gomez, G. M. (2010). Raccontare la formazione. Analisi delle pratiche nei centri di Formazione Professionale dell'associazione CIOFS/FP-Puglia. Taranto: Print Me.

Tess, P. A. (2013). The role of social media in higher education classes (real and virtual)-A literature review. Computers in Human Behavior, 29(5), A60–A68. https://doi.org/10.1016/j.chb.2012.12.032

Tower, M., Latimer, S., & Hewitt, J. (2014). Social networking as a learning tool: Nursing students' perception of efficacy. Nurse Education Today, 34(6), 1012–1017. https://doi.org/10.1016/j.nedt.2013.11.006

UNIVR. (2018a). Analisi degli iscritti - A.A. 2015/16. Retrieved March 5, 2018, from http://www.univr.it/documenti/Documento/allegati/allegati535300.pdf

UNIVR. (2018b). Corsi di laurea. Retrieved March 5, 2018, from https://www.univr.it/main?ent=offerta&tcs=N

Wodzicki, K., Schwämmlein, E., & Moskaliuk, J. (2012). "Actually, i Wanted to Learn": Study-related knowledge exchange on social networking sites. Internet and Higher Education, 15(1), 9–14. https://doi.org/10.1016/j.iheduc.2011.05.008

COGNITIVE DEVELOPMENT OF STUDENT-SPORTSMAN – WAY FOR CHAMPIONS

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Abstract

In the present work, the question is raised relative to the contribution of educational institutions to harmonious development of the student-sportsman personality. The problem of socially active education of a student is discussed, as well as the contribution of educational institutions to the cognitive development and the formation of the sportsman personality. With the help of a theoretical-historical analysis and biographical method, an analysis of the life path of initiators and companions (associates) of the development of sports movement in Russia, as well as the life histories of outstanding sportsmen (athletes) - champions of the Olympic Games and Chess Olympiads, graduated from the St. Petersburg State University was made. Subject areas, which were mastered by the heroes in the years of their study at the university and determined their cultural and ideological appearance in the subsequent years of life are marked. A study of the collective image of a modern sportsman (athlete)-universant (a University graduate) was performed, in which graduates and teachers, who represented the University, city, country at international and Russian competitions (including participants and prize-winners of the Olympic Games) took part. Respondents noted the most striking episodes of their sports life during their studies at the University, the sports award that is the most precious for them, they drew a generalized image of a university sportsman, named their life slogan (motto), shared what the University is for them. The received results testify about the really significant contribution of educational institutions in forming the personality of future champions, as well as of ideologists and practitioners of realizing (implementing) sports initiatives.

Keywords: Sport, student-sportsman, health, cognitive development, higher education.

1. Introduction

Discussion of the problem of sport training goes beyond the purely physical development of an individual. Equally important are the issues of upbringing and shaping the public face of an athlete and country he represents. Today, various international organizations accept documents that recognize the sport as an important means of educating and developing the personality (see, for example, UN General Assembly Resolution 58/5 , i.e., "Sport as a Means to Promote Education, Health, Development and Peace", "Global Strategy for Rational education, physical activity and health ", WHO, 2004, resolution" On Promoting Health and Healthy Lifestyles ", etc.).

Functionally, the sport commercial is a catalyst for the economy, sport of the highest achievements is an indicator of the gene pool level and a substitute for war. As to the mass sport, it is a way to improve the phenotype of an individual and improve the health of the people [Piloyan P.A., 1990].

The most important health resource is adequate personal functioning, based on the formed value-semantic hierarchy with the priority of moral values, which is important for the education of the life guides of young people [Corjova E.Yu., Veselova E.K., Zalevsky G.V., Anisimova T.V., 2017]. Under the resources of health it is possible to understand the physical, psychological, moral, socio- psychological capabilities of a man, the mobilization of which ensures his well-being at different levels of life.

At the physical level, the indicator of health is bodily well-being, assessed by medical indicators. At the mental level, the indicators of the correspondence of subjective images to the objects to be reflected, at the age-appropriate maturity level both in the emotional-volitional and cognitive spheres, should be evaluated. At the personal level, the signs of the formed adequate hierarchy of the

value-semantic sphere with the priority of spiritual and moral values are actual, as well as the optimal level of subjectivity as the ability to reflect and self-manage behavior. The resources for restoring and promoting health at the physical level (bodily health) are a healthy lifestyle, physical education, medical activities, and favorable environmental and economic conditions. Resources at the level of mental health are correctional and developmental programs aimed at the optimal functioning of mental processes, as well as educational programs aimed at promoting healthy lifestyles. Resources at the level of personal health can be educational programs of forming the world outlook and moral maturity of students, creation of conditions for creativity and self-realization in morally-oriented activity.

At the same time, playing sports and higher education are often perceived as impossible things for an equally successful combination. Some stereotypes of students-athletes emerge, according to which such students (people) are not too developed with respect to ccognitive and cultural action (activities). How much are such judgments justified and equitable? Is it really necessary to sacrifice the quality of education in order to achieve high results in sports? Or is it a natural reverse tendency - the cognitive development of a student-athlete paves him the way to the highest achievements, to success, or even to championship?

2. Design

In this paper, a preliminary analysis of the history of the development of sports movement in Russia and an assessment of the contribution of individual organizations, societies and educational institutions to the development of physical culture and sports in the country are given. Moreover, a meaningful analysis of the biographies and achievements of outstanding sportsmen and pioneers of the Russian sport, who were educated (trained) at the St. Petersburg State University, was carried out. On the basis of the theoretical and historical analysis carried out, there were developed methodological tools that made it possible to reveal modern ideas about students who are engaged in sports in the process of obtaining higher education.

3. Objectives

Analysis of the problem of social and active education of the student, as well as the contribution of educational institutions to the cognitive development and the formation of the personality of the athlete.

4. Methods

During the research we used the method of theoretical and historical analysis of literature and archival materials on the history of the formation and development of the sports movement in Russia, biographical method, questionnaire, method of content analysis.

Theoretical and historical analysis - obtaining new knowledge about the history of any issue or problem. The main stages of using the historical method: 1) collection of data on the past; 2) interpretation; 3) historical assessment; 4) assessment of correctness and relationship with history.

Biographical method – a method of research of features of the individual by the analysis of his way of life where vital conditions of formation of hierarchy of value orientations, the dominating attitudes and motives of behavior, the generalized ways of reaction of the personality in standard situations are established. Using the biographical method is carried out a substantive analysis of the life of initiators and associates the development of sports movement in Russia and life stories of outstanding Soviet sportsmen – Champions of the Olympic games and chess Olympiads who have received higher education in St. Petersburg state University.

Questionnaire method – a method that uses a specially designed questionnaire question list as a means of collecting information from a respondent. The questionnaire procedure involves a written survey using preprepared forms. Using the method of the survey the study of the collective image of the modern athlete, the University, which was attended by the graduates and teachers, in different years, representing the University, city, country, Russian and international competitions (including the participants and winners of the Olympic Games) (overall, with the survey interviewed 42 people).

The questionnaire included questions about the Respondent's biographical data (years of study at the University, faculty, profession, state awards, place of work, position), as well as the following questions: "Describe the most striking episodes of your sports achievements during the years of study at the University", "Your most valuable medal", "Your life slogan (principle)", "Describe the image of an athlete-student", "University for you is...".

5. Discussion

The theoretical and historical analysis showed that at the moment of the very beginning (birth) of the modern Olympic movement (the second half of the 19th century), the main centers of the sport life of Russia were St. Petersburg and Moscow [Olesich, 2013]. Here the first sports clubs were opened, just here the start organizational principles of the national sport were formed, the first championships and tournaments began. When estimating the role of individual organizations, societies and educational institutions in the development of physical culture and sports at that time, one can affirm: among the most active figures in the field of sport in St. Petersburg and the country were students of St. Petersburg State University.

A considerable number of graduates, employees and students of the University had a direct relationship to the Russian sports movement, stood at its origins, made a significant contribution to the development of Olympism. An analysis of a large number of historical facts and archival materials shows that in Russia it was the student youth who ideologically combined education, sport and the development of society [Olesich N.Ya., Taratynov S.I., 2014].

Graduates of the St. Petersburg University took upon themselves the mission of a historic breakthrough, the transition from sport "fun"and "hobby" of rich people to the recognition of the social value of physical culture. They contributed to the entrance of Russian sport into the world sporting process. In connection with this, it is interesting to trace the evolution of attitude to sport and physical culture in Russian society, and also to note the role of intellectual development in the structure of other levels of improving human nature.

It is interesting that before the idea of playing sport and physical culture firmly was established in the mind and lifestyle of a modern Russian citizen, a long and hard way had been gone towards overcoming a negative attitude of the intellectual part of society to physical culture. Within quite a long period in Russian society, going in for sports was considered amusement, the prerogative of aristocratic circles. So, for example, for centuries the nobility pastime included such events as hunting, horse racing, fishing, fencing, shooting. Such secular amusements contributed to training men for military service or were rehearsals for the traditional defense of offended dignity and honor - a duel.

The nobility world imitated the traditional sport hobbies of Russian emperors, and the view of sport as amusement was for a long time also among students, the greater part of whom in the second half of the XIX century was the youth of the privileged classes. For ordinary people ("lower orders people"), only fisticuffs "wall to wall", tug-of -war and cockfighting existed.

Later, during liberal reforms and the formation of capitalism in Russia, Western sports hobbies began to be introduced: bicycle, gymnastics, ice skating, tennis, water exercises, rowing and sailing classes, etc. And with the design of the state education system in Russia, in county schools, gymnasiums, and higher education institutions, the government documents recommended, although as an optional item, the introduction of "body exercises" (gymnastics). Directors of such education organizations were sometimes required to seek funds themselves for teaching these disciplines.

A significant shift in changing the attitude towards physical exercises occured at the time of liberal reforms of the XIX century, when the Government introduced into the charters of educational institutions the standing order (provision) on the mandatory gymnastics and the involvement of teachers of this profile. In 1874, after the introduction of the law on universal military service for the preparation of young men for military service, the gymnastics lessons were introduced in all types of secondary schools.

Directors (headmasters) of secondary schools often ignored this law due to a lack of teachers, scientifically developed programs and conviction (assurance) that physical education is necessary for the formation of a useful member of society. And there, where the lessons were still held, they turned into hateful drill exercises, accompanied by a soldier's drill.

For quite a long time, the issues of physical education in Russia did not seem to be a problem of state significance. However, gradually the enthusiasm for sports covered all classes of society. And most often initiators and participants in creating various sports clubs, clubs, magazines were the university students and graduates of the "new" breed, bright, extraordinary personalities who gave an excess of their energy to sports.

Among the people who made a special contribution to the development of the sports movement in Russia, it can be mentioned: P.F. Lesgaft, privat-docent of the Natural faculty of the St. Petersburg University, who read lectures on anatomy, awakening the students' interest in understanding the physical nature of man; A.P. Lebedev, grandfather of Russian figure skaters, graduate of the Law Faculty of the St. Petersburg University; V.I.Sreznevsky. the first Chairman of the Russian Olympic Committee, graduate of the History and Philology Faculty; G.A. Duperron, chronicler of Russian sports, the first Russian sports journalist who visited the Olympic Games of his contemporaneity. founder of Russian football; and

N.A. Panin-Kolomenkina, the first Olympic champion of Russia, graduate of the Physics and Mathematics Faculty of the Imperial University; and many others.

In different historical times, the student youth, with all the diversity of its individual opportunities and differences in origin, associated ideas of innovation, individual freedom, citizenship. And which is most important - they were not indifferent to the future of Russia, spirituality and health of the nation. In particular, the St. Petersburg athletes were highly educated, had knowledge of languages, possessed the culture of communication. Spiritual qualities were brought up by Russian philosophy, scientific and pedagogical literature. This part of education was contributed by the works of N.G. Chernyshevsky, N.A. Dobrolyubov, D.I. Pisarev, K.D. Ushinsky, N.I. Pirogov, P.F. Lesgaft and all other works of classical Russian literature.

After the revolution of 1917, the social importance of sports and physical exercises began to be evaluated very highly. The Soviet athlete or sportswoman quickly became a kind of archetype of the "new man", the embodiment of which after coming to the power the Bolsheviks started. The image of the Soviet "new man" is the image of a strong, physically hardened, self-denying citizen, bodily and spiritually transformed as a result of the emergence of the new Soviet state. The physical education of youth became a means of preparing the country and its life for labor (productive) activity and for the armed defense of the socialist fatherland.

Changes in attitude towards the sport and physical culture were embodied in the active involvement of Soviet citizens in programs that supported health and body care (for example, the development of the system of RLD), a healthy lifestyle, and the recognition by the state of the enormous potential of such important aspects of physical culture as competitions and theatrical sports parades. Such a serious attitude towards sports has generated the idea of impossibility of successfully combining the learning process in the university and achieving high results in sports.

The content analysis of answers to the questions of questionnaires of modern student-athletes and graduates of the University showed that the sports achievements and intellectual sphere of life did not contradict each other, physical and cognitive development were linked together. The main characteristics and descriptors of a student-athlete, which were singled out by the respondents could be divided into three groups:

1. Affective sphere (emotional, energy characteristics): cheerful, sympathetic, with a good sense of humor, purposeful, energetic, active, active, initiative; who has a sense of pride in his sports team.

2. Cognitive sphere (aspiring to knowledge): highly intellectual, intelligent, intelligent, thinking, having an active life position, educated, interesting creative personality, a good conversationalist, erudite.

3. Motivational-strong-willed sphere: strong-willed, self-organized, responsible, executive, punctual, reliable, striving for victories, purposeful, collected, "ready for feat", aimed at constant self-improvement.

4. Behavior sphere: ready to work "day and night", disciplined, educated, conscientious, open.

5. External and physical data (individual characteristics): beautiful, strong, harmoniously developed, strong and sunburnt.

For many respondents, the University was a certain step in life, with the help of which they had the opportunity to develop and improve themselves. This is one of the most important periods in life, largely predetermining their future destiny and shaping their personal appearance. Life slogans of the respondents perfectly illustrate their sporting mood, which they have saved for life: "Never give up," "Nothing is impossible", "Forward, to victory!!!".

A number of slogans are a reflection of the true university spirit, intelligent, responsible, optimistic: "If not me, then who?", "Any business for which you undertook, should be done with full dedication!", "With respect, to any work (affair, matter)", "Success in life depends on ourselves, "" From any difficult situation it is possible to find a way out"," Life is beautiful."

An analysis of answers of some influential graduates of the University to questions from the questionnaire showed that after leaving alma mater and having achieved a success in the most diverse professional fields (politics, business), they demonstrate their loyalty to the sports traditions of the University. Study and sport for a university student-graduate are the most important, equally valuable things. He finds time for everything that he considers important for himself. All those involved in sports seriously, took place in life as a person. Only a few of them became masters of sports, but the majority of graduates became candidates and doctors of sciences, directors of successful firms and highly skilled experts.

6. Conclusions

The analysis of the peculiarities (specific features) of strengthening the positions of physical culture and sports in Russia shows that an outstanding role in the development of national sports and the Olympic movement belongs to employees, students and graduates of higher educational institutions. At the forefront of the cohort of famous champions, sports journalists and just sports fans, there have always been students and graduates of the University, among them many champions of the World, Europe, Olympic Games. The above, in turn, emphasizes the special attention to recognizing the indisputable contribution of educational institutions to shaping the personality of future champions, as well as ideologists and practitioners of implementing sports initiatives.

The analysis of the life histories of many outstanding sportsmen and graduates of the St. Petersburg University, including the modern ones, made it possible to say that getting an education was not a hindrance, but, on the contrary, a catalyst for sports victories. For many students, in their own words, their sports career began to progress (gain momentum) at the time of training (studying) at the University. The development of cognitive processes contributed to reaching a higher social level, becoming champions not only in sports, but also in public life. The image of an athlete-student includes cognitive, energetic, affective, motivational-volitional and individual characteristics. All these characteristics are presented positively. Moreover, a high level of acceptance of oneself is detected.

The idea of educating potential champions on examples of acquaintance with the biographies of people involved in the development of the sport history of their country seems to be significant. For outstanding sports records and achievements are portraits and fates of specific people, their life histories and circumstances, which largely predetermined such outstanding results.

References

Conception Education Health Development Peace. Press-release Office for the International Year of Sport and Psysical Education (2003), 20 p.

Corjova E.Yu., Veselova E.K., Zalevsky G.V., Anisimova T.V. (2017) Integral'naya resursnaya concepciya zdorovja v kontekste otechestvennih podhodov. *Izvestiya The Herzen University*, 184, 31 – 44. [Corjova E. Yu., Veselova E. K., Zalevsky G. V., Anisimova T. V. (2017) Integrated resource, the concept of health in the context of domestic approaches. *Proceedings of the Herzen state pedagogical University. A. I. Herzen*, 184, P. 31-44.

Olesich N.Ya. (2013) Peterburgskiy universitet na puti k olompiyskpmu dvizheniyu [St.Petersburg University on the way to Olimpic Movement]. *KLIO. Zhurnal dlya uchenykh*, 10 (82), 54-55.

Olesich N.Ya. (2014). *Universitet Olimpiyskiy. Sportivny mir Peterburgskogo universiteta.* In Russian *[*Olesich N.Ya. (2014). *Olympic University. Sports World of St. Petersburg University*]. St. Petersburg: Znamenitye Universanty SPbGU.

Olesich N.Ya., Taratynov S.I. (2014) V avangarde dorevolucionnogo sporta. *Universitet Olompiyskiy. Sportivny mir Peterburgskogo universiteta.* St. Petersburg: Znamenitye Universanty SPbGU. [Olesich N.Ya., Taratynov S.I. (2014) In the Vanguard of pre-revolutionary sports / *Olympic.University . Sports World of the St. Petersburg University*. St. Petersburg : "Famous graduates of the St. Petersburg State University".

Olesic N.Ya., Samuylova I.A., Anisimova T.V. (2018). Psihologicheskiy portret sportsmena: intellect v sporte ili sport bez intellecta? *Teoriya I praktika phizicheskoy kul'turi.* 4, 91–92. [Olesich N.Ya., Samuylova I.A., Anisimova T.V. (2017) Psychological portrait of an athlete: intellect in sport or sport without intellect? *Theory and practice of physical culture*, 4, 91-92].

Piloyan P.A. (1990) Fizkul'tura I sport: puti perestoyki. *Teorii I praktika phizicheskoy kul'turi.* 7, 3 – 7. [Piloyan P.A. (1990) Physical Education and sport: ways of restructuring. *Theory and practice of physical culture.* 7, 3-7].

THE CHALLENGE OF FOSTERING EQUITY IN A TESOL GRADUATE COURSE: A PARTICIPATORY ACTION RESEARCH PROJECT

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Abstract

Equity is not simply the act of treating everybody as equal, but to make the unprivileged ones have the same opportunities of growth as the rest of the society in which they live. This presentation discusses the importance of applying participatory action research to educational contexts and exemplifies with a project which attempts to help learners that have a lower level of English than their classmates succeed in their ELT graduate course.

Participatory research (including action research) is always interdisciplinary, linking education, communication and the area in which the study. It based on socio-interactionism, it takes place in a socio-cultural context and counts on the participation of many different agents. As Paulo Freire (1998) used to say, the one who teaches learns at the same time and the one who learns teaches too. Participatory research is social research but at the same time they are educational action. It means to understand the reality in order to be able to transform (change) this reality. In the beginning, the project was almost a one-teacher´s idea, but learners were invited to take an active role and now many learners (future teachers) are also involved in the research.

The theoretical background of the study includes concepts such as: participatory action research; autonomous learning; learning strategies; collaborative learning; and ICTs in education. The idea is not only to focus on the development of the learners' linguistic competence, but their learning strategies awareness as well. The study is also an attempt to develop methodology awareness and to discuss effective ways of using digital technology for learning and teaching of English. All the participants of the research are future teachers, so we expect that the participation in the project will contribute for the development of more collaborative, critical and creative language teachers.

The project started three years ago, and its results have been very positive, with less dropouts and better grades. Courses were organized, virtual communities were launched, scholarships were negotiated; and a VLLE (virtual language learning environment) was developed. However, we faced some problems during the project implementation as well. Two of them were learners' lack of time and the lack of funding to buy materials for them. The last part of the presentation consists of the analysis of these results, by using learners' feedback as the main source of information.

Keywords: Teacher education, methodology awareness, participatory action research, technology, learning strategies.

1. Introduction

This presentation discusses the importance of applying participatory action research to educational contexts and exemplifies with an ongoing research project which attempts to help learners that have a lower level of English than their classmates succeed in their ELT graduate course. In the beginning of the project, it was almost a one teacher's idea, but now many learners (future teachers) are also involved in the research.

2. Research background (the puzzle)

The university where I work has adopted a policy of giving the less privileged students the chance of taking a graduate course. The idea is of helping the poorer is legitimate, however, as most of these learners come from substandard quality schools, their level of English is not enough for following most of their classes, which are taught in English. Moreover, because of financial constraints, most learners start to work very early, without much time to study. Consequently, before the project which

started in 2014, the dropout and failure rates had been significantly increasing. Therefore, we tried not only to understand why it was happening, but also how the situation could be improved. For the learners who were placed at the more basic levels, we negotiated some scholarships at the university language center. We also developed some other actions to help keep these learners at university. All of them were planned collaboratively and many times developed by these and other learners themselves, always under the guidance of their teachers.

The theories which supported the study included: autonomous learning (Freire, 1998; Scharle & Szabo, 2000); learning strategies (Cardoso, 2016, 1997; Cardoso et al., 2015; Oxford, 1990, 2017) and learning styles (Leaver, 1998; Reid, 1995); collaborative learning (Vygotsky, 2000; Vygotsky et al., 2000); and ICTs in education (Cardoso, 2016; Cardoso et al., 2015; Silva, 2011). However, for this specific presentation, I would like to concentrate on the methodology of the research, devoting more attention on the following aspects: *reflective teaching* and *participatory action research*. Our idea was to develop learner autonomy but following Scharle & Szabo (2000)'s approach, we understand autonomy as a process, not a final product. We believe that if learners were aware of their different learning styles, they would be able to choose learning strategies more adequate to different activities.

3. Objectives

The project has two main objectives: to improve learners' linguistic competence and to develop their methodology awareness. Considering the development of learners' linguistic competence, we attempt to help learners that have a lower level of English than their classmates. The idea is not only to focus on the development of the learners' communicative skills, but to reflect on the learning strategies employed by them. As for the methodology awareness, during the project, learners have the opportunity to discuss effective ways of using modern technologies (mainly ICTs) for the teaching of English. The participants of the research are future teachers and have the opportunity of engaging in a positive experience in relation to the use of educational technologies, so we expect that this will contribute to a more critical and creative use of these tools. Besides, by following a collaborative approach, they are able to learn at the same time that they are teaching their colleagues.

4. Methods

4.1. Research participants and questions

In the first phase of the research, 56 learners took the placement test and answered the needs analysis questionnaire. They were all university students from a public university in Rio de Janeiro. From this group, 33 were invited to take part in the project, an 20 accepted. Now four years later we are evaluating this first phase of the project and planning new actions.

This qualitative research attempts to answer the following questions:
(a) Can these learners develop their communicative skills in a more autonomous way?
(b) Which learning strategies could be considered effective to this group of students?
(c) How can ICTs be used to affect positively in their learning process?
(d) What can be done to make the project more and more effective?

4.2. Reflective teaching

Adopting a *reflective teaching approach*, the participants of the project consider teachers as constant researchers. Hadley (2004) introduces the concept of *reflective teaching*, by presenting the difference between *reflection-in-action*, reflections and actions that take place during classes, and *reflection-on-action*, reflections and actions that take place before or after the classes. Later, Liberati (2015) presents a new classification with different kinds of teacher reflections: *technical reflection*, *practical reflection* and *critical reflection*. For her, Hadley (2004)'s concept of reflective teaching applies only to one kind of reflection, *the practical one*, as it focuses on more functional needs. It is when teachers try to look for solutions to their practical problems through reflecting about their own practice. Her second category is the *technical reflection*, which is related to an assessment and/or change in the teachers' practice based on theory, trying to adopt theory to practice. The third kind of reflection is the *critical reflection*, when teachers are able to analyse their social and cultural reality and attempts to transform it.

In our case, the reflections and actions were taken during the whole research process. And we may say that we have applied different types of reflection, depending on the activity being developed or the instrument of research being used. There were some actions planned before the beginning of the research in 2014, but the choice of implementing these ideas or taking another pathway has been taken during the whole process, collaboratively. We consider the project as a continuous process, and possible to be replicated as many times as it is needed.

4.3. Participatory action research

This project has applied a specific kind of action research: *participatory action research* (Brandão, 2006), as an approach to teacher development. Participatory research is social research, but at the same time it represents educational action. Thiollent (2011) includes as one of the most important aspects of this kind of research the interaction between the different agents (participants of the research). From this interaction, results the order of priority of the problems to be analyzed and the solutions to be implemented as concrete actions. Learners and their teacher work together, attempting to find an answer to a common puzzle (Allwright, 2002, 2003): how to help part of these learners who do not the level of language knowledge required to take part of the ELT course.

To make these decisions, Thiollent (2011)'s main aspects of action research where taken into consideration:

- **Ample interaction** between all the participants (researchers and the people involved in the investigated situation);
- **This interaction establishes the order of priority of the problems** to be researched **and the solutions** to be implemented as a concrete action;
- The **object of the investigation** does not consist of the people but by the **social situation** and by the different kinds of problems faced in this situation;
- The **objective** of the action research consists in **solving, or at least clarifying, the problems of the situation** being observed;
- During the process, there is **a follow-up of the decisions, of the actions and of all intentional activity** by the actors of the situation;
- The research is not limited to a form of action (risk of activism): the goal is **to enhance researchers' knowledge and the other participants' knowledge or level of awareness**.

(Thiollent, 2011, p.22 – my translation, original in Portuguese)

Based on Allwright (2002, 2003), Nunan (1992), and Thiollent (2011), the steps of the action research cycle of our project were defined as can be seen in Figure 1 (see below).

Figure 1. Project Action Research Cycle.
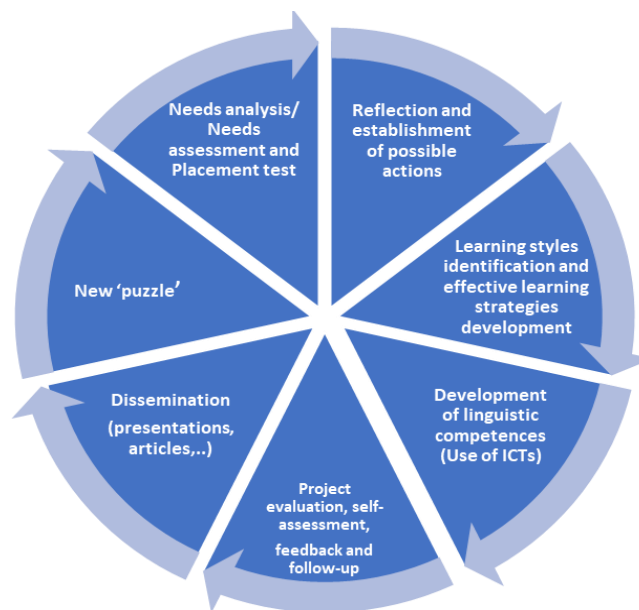
5. The project report

The first action was to visit classes and invite learners to take part in the project. We invited the ones who would like to take the placement test and the ones who would be interested to work as volunteers, interns or monitors. In 2015, the first phase of the project, 56 placement tests were taken and 56 needs analysis were answered. From the 56 students, 33 learners were assessed below intermediate level, being 6 placed at the basic level (real beginners). The next step was to visit the groups again, but this time presenting a learning strategy awareness workshop, with many different fun activities. After choosing the learners who would work on the project and with the results of the placement test in hands,

we negotiated scholarships for real beginners and developed language courses for learners who already had some knowledge of the English language (pre-intermediate – A2 level).

All the courses linked to the project are developed by university learners. Every two months there have been meetings with monitors and volunteers to discuss how to guarantee special support and remedial work for these learners. This support may be done to each learner individually or too a group of students in special workshops or lectures. Besides, social networks have been used as a means of communication, to share information about courses, helpful language activities or interesting links. There is also a virtual learning environment, using the Moodle platform to share useful sites, and from the next semester, it will be used to offer an online language course. Another action that started with the project was the creation of study groups, which later became a research group. Learners involved in the project meet to discuss readings related to the project. They have even been presenting the project in events and some of them have even written an article about the experience (Cardoso et al., 2015).

To evaluate the effectiveness of the project, we have interviewed learners involved in the project online questionnaires, interviews, informal conversations, learners' grades and overall performance, number of dropouts and the actions which were effectively developed.

6. Discussion

In 2015, we published an article in which we presented the views of five of the learners involved in the project. Some of the points made by them were:

a) The project has met (or should we say has been meeting) its objective. All the interviewed were very positive about the project.

b) Most of the feedbacks reinforced Freire's theories. They all mentioned that while they were teaching they were learning, and as learners they felt that they contributing to their colleagues as well.

c) The process of language learning strategies awareness was effective. They showed to understand that there is not only a single way of learning and that the strategies to be employed depend on the activities being developed and the individual learning styles.

d) A very positive atmosphere towards the use of technology to language teaching and learning was developed. Even the ones who were more skeptical at first, seem to have changed their minds. They were able to understand that it is not necessary to develop very complex activities to use ICTs. On the contrary, apps that they use daily can be transformed in language learning or teaching tools. They themselves decides to create the Facebook community to make communication simpler. (The 2018 group is working with Evernote to control the project, *Whatsapp* for communication and other apps for language learning).

e) Better linguistic performance, with more participation and more positive results. 85% of the pre-intermediate students passed, 10% dropped out and only 5% failed.

After this first phase, we faced two very difficult years, 2016 and 2017. Teachers' salaries and learners' scholarships were not paid punctually. Last year (2017) was the most difficult one. The precarious situation led to two long (learners' and teachers') strikes, one lasted five months and the other three months. Many students gave up the university course for financial reasons, so the project slowed down. Now we have been trying to evaluate the process and to plan new actions based on the results of our research. For our very positive surprise, most of the learners from the first group are still at university and some of them are graduating this year. There a few who decided to transfer to another course at university. They are studying to become Portuguese language teachers. Two of them mentioned that the course did not fulfill their expectations and they have decided to change their career plans. The rewarding aspect is that all of them recognized the importance of the project.

The suggestions given by these learners are being taken into consideration and, for this new phase of the project, we have already planned two new actions: creating a conversation club (to start in the first semester of 2018) and designing an online language course, focusing on essay writing, improving pronunciation and reviewing language structures and vocabulary (planned to begin in the second semester of 2018) in an integrated way. As we believe this should be a continuous project, we want to go on with our research, which represents a critical reflection of our practice.

7. Conclusions and future work

The project started three years ago, and its results have been very positive, with less dropouts and better grades. Courses were organized, virtual communities were launched, scholarships were negotiated; and a VLLE (virtual language learning environment) was developed. However, we faced some problems during the project implementation as well. Two of them were learners' lack of time and

the lack of funding to buy materials for them. Now (2018) we are beginning a new phase of the project, with more than 30 (including teachers and learners) involved in the project. We will begin visiting the classes in April, a conversation club will be offered from May on and an online language review course from August on. I would like to finish my presentation with the discussion, or at least reflection, on the first sentence of my summary:

"Equity is not simply the act of treating everybody as equal, but to make the unprivileged ones have the same opportunities of growth as the rest of the society in which they live."

References

Allwright, D. (2002). Bringing classroom language learning to life. *Pesquisas em discursos pedagógicos: Qualidade de vida na sala de aula.* Vol. 1(1). RJ: IPEL – PUC Rio.

Allwright, D. (2003). Planning for understanding: A new approach to the problem of method. *Pesquisas em discursos pedagógicos: Vivenciando a escola.* Vol. 2(1). RJ: IPEL – PUC Rio.(2ª ed.).

Brandão, C.; Streck, D. (org.) (2006). *Pesquisa participante: o saber da partilha.* Aparecida: Ideias e Letras.

Cardoso, J. et al. (2015) Estratégias de aprendizagem e tecnologias de informação e comunicação como facilitadores no processo de aprendizagem de idiomas. In Cardoso, J.; Baalbaki, A.; Arantes, P.; Bernardo, S. (2015). *Linguagem: Teoria, análise e aplicações (8).* Rio de Janeiro: Letras-UERJ.

Cardoso, J.S. (2016). *Estratégias de aprendizagem: eficácia e autonomia na compreensão oral.* Saarbrücken: OmniScriptum/Novas Edições Acadêmicas.

Cardoso, J. S. (1997) *The influence of learning strategies on the listening comprehension process in instructional contexts.* Master's degree dissertation. Niterói: UFF.

Favero, M. L. de A. (1996). Universidade e estágio curricular: subsídios para discussão. In Alves, N. (1996). *Formação de professores: pensar e fazer.* São Paulo: Cortez.

Freire, P. (1998). *Pedagogia da autonomia: saberes necessários à prática educativa.* São Paulo: Paz e Terra.

Hadley, G. (2004). *Action Research in Action* (Pesquisa de ação em sala de aula). São Paulo: SBS/SEAMEO.

Leaver, B. L. (1998). *Teaching the Whole Class.* Iowa: Kendall/Hunt (5th ed.).

Liberati, F. C. (2015). *Formação Crítica de Educadores: Questões Fundamentais.* Campinas: Pontes.

Nunan, D. (1992). *Research methods in language learning.* New York: CUP.

Oxford, R. (2017). *Teaching and Researching Language Learning Strategies: Self-Regulation in Context.* (2nd ed.). New York: Routledge.

Oxford, R. *Language learning strategies.* New York: Newbury House, 1990.

Reid, J. (ed) (1995). *Learning styles in the ESL/EFL classroom.* Boston: Heinle & Heinle,1995.

Scharle, Á. & Szabó A. (2000). *Learner autonomy: a guide to developing learner responsibility.* Cambridge: Cambridge University Press,

Silva, M. (2011). Os professores e o desafio comunicacional da cibercultura. In: Freire, Wendel (org.). *Tecnologia e educação: as mídias na prática docente.* Rio de Janeiro: Wak editora.

Thiollent, M. (2011). *Metodologia da pesquisa-ação.* São Paulo: Cortez. (18th ed.).

Vygotsky, L. S. (2000). *Pensamento e linguagem.* São Paulo: Martins Fontes.

Vygotsky, L.S., Luria, A.R., Leontiev, A.R. (1988) *Linguagem, desenvolvimento e aprendizagem.* São Paulo: Ícone/ USP.

THE EFFECTIVENESS OF DEMONSTRATIONAL METHOD IN PROMOTING STUDENT CENTRED METHOD: A CASE STUDY

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Abstract

Civil Technology is the subject that emphasises theory and rigorous practical work for it to be regarded as one of the sought-after subjects. The problem is many teachers prefer a theoretical approach to teaching it at the expense of practical which then promotes teacher–centred method. The aim of this case study was to observe the effectiveness of the demonstrational method in promoting student-centred strategy or method of teaching and learning. The main objectives of the study were to determine the level at which demonstration method could promote student-centred method. Researcher used mixed-method (qualitative and quantitative) to collect data. A structured interview (verbal test) and practical performance test (quantitative) developed by the researchers and pre-tested for reliability and validity for clarity and relevancy, were used as data collection instruments. Purposive sampling was used to select participants, 28 participants were characterised by males and females of the same age group of between 19 to 25 years who came from the diverse cultural background, doing Baccalaureus Education Senior Phase and Further Education and Training: Technology register for Civil Technology III at Central University of Technology, Free State South Africa. Measures which were used in the research such as teacher knowledge demonstration, teacher practical work demonstration, Video of subject content lesson presentation (dumpy level) observation by the lecturer and students, students verbal test and students practical performance test were used for the first stage and last stages of the research. An interpretive approach was used in the research in order to facilitate interact with the participants with the view of understanding making meaning to their context. Data collected were analysed, coded, categorised into themes and comparative analysis done leading to the interpretation of the results by the researcher. The study revealed that majority of the students understands the theoretical content faster when the lecturer presents the theory through the demonstration method. The results also indicated that students get motivated and enthusiastic when they are actively involved in the technology lesson presentation by being hands-on, reflecting the need for the student-centred method which enhances scholarship of teaching and learning.

Keywords: Demonstration method, student centred method, theoretical content, practical skills.

1. Introduction

The subject Civil Technology requires the individual dual capability of practical and theory for both teacher and student, therefore, the teacher should demonstrate content knowledge into practical work performance and the student should be able to apply both content knowledge and practical work and that could be learned when a student is hands-on thus promoting student-centred method.

The demonstration method is one of the many pedagogical methods that are normally used in imparting practical knowledge in teaching technical and technology subjects. The method is used with other teaching methods to give students the opportunity of participating in the lesson as presented by the lecturer and to determine whether the lecturer is capable of demonstrating practical skills effectively.

2. Conceptualisation of the study

2.1. Demonstration Method

Demonstration method as it has been propounded by Chikuni (2003) that, there are two types of demonstrations, namely the step by step and the whole process demonstration. In the whole process demonstration, the teacher demonstrates the full process from the beginning to the end without interruption by learners‟ participation (Chikuni 2003). For instance, the teacher shows how to tack the dart, stitch it,

and fasten the thread and pressing the dart to the correct side. The pupils will then follow the process by making their darts (Chingombe, 2013:50).

Chikuni (2003) also notes that the step by step demonstration takes place when the process is presented in stages that are inter-spaced by learners" participation. For example, when making a shirt, the teacher demonstrates how to attach a patch pocket and pupils work on their shirts individually, after the demonstration (Chingombe, 2013:50).

2.2. Student Centred

The Student-Centred approach (SCA)) is a theoretical approach which focuses on the process of learning by students. Student-centred education is a learning that considers the student as an active, inquisitive being who strives to acquire knowledge about his or her surrounding world. According to McCombs (2009:35), the "Student-Centred approach consists of a variety of materials, guided reflection and assessment tools that support teachers and administrators" effectiveness and change at the individual and school levels". Concomitantly, SCA evidences which factors impact students and learning.

2.3. Civil Technology

Civil Technology is technical or technology subject with the concepts and principles of building environment, it consists with three streams: Construction, Civil services and Woodworking. The main aim of the subject is to infuse content knowledge and develop a practical skill that will bridge of entrepreneurial education (Mokhothu, Maimane, 2017:418; Mokhothu, 2015:17; DoE, 2012:8). Civil Technology falls in the Engineering and Technology learning field and gives learners the opportunity to solve problems by practically carrying out simulations and doing real-life projects, using a variety of processes and skills (Mokhothu, 2015:17; DoE, 2012:8; DoE, 2008:7-8).

3. The aim of the study

The aim of the study is to observe the effectiveness of the demonstrational method in promoting student-centred strategy or method of teaching and learning.

4. Objectives

The objectives of the study are to:
• Determine how demonstration method promote student centred method in Civil Technology.
• Examine the significance of student method in Civil Technology
• Assess quality of content knowledge and skills envisage through demonstration and student centred methods.
•

5. Proposition

Students who learn through demonstration method gain a better understanding of a learning content and practical work as it allows them to take a lead of their own learning process (student-centred).

6. Methodology

6.1. Context of the study

Civil Technology student were placed in Civil Technology classroom for theory content. The Lecturer prepared and demonstrated the lesson about dumpy level: names of different parts, taking readings from telescopic staff and calculations of distance and slop. After lecture and demonstration investigation, practical task, oral test and final report (assessment) were given to assess and observe the student responses. The study takes place in the third term of their second year of studies in Bachelor of Education FET specialisation Technology (BEd: FET& SP) four years' program

6.2. Participants

All participants were Civil Technology second year students studying at Central University of Technology Free State in South Africa. Purposive sampling of Civil Technology was 28 and all students participated in the study were 28, consisting of 15 males (54%) and 13 females (46%).

6.3. Measures

Oral test, practical test (project) and investigation report, were used for the first stage of the research to the final stage of the research. The questions included the following in different stages:

Oral test, (a) Discuss the function of a retcle and its hair lines?

(b) Explain a collimation sheet provide with: BS, IS, FS, Rise, Fall, Reduced level?

(c) Why different heights must be known in the building environment?

(d) Argue the philosophy of surveying in built environment, accuracy and units of measurement?

7. Results presentation and Discussion

Table 1. Oral test results (30 marks).

Students	Percentage%	Students	Percentage%
Students A	50	Students O	100
Students B	90	Students P	100
Students C	50	Students Q	100
Students D	90	Students R	100
Students E	90	Students S	100
Students F	90	Students T	90
Students G	55	Students V	100
Students H	90	Students W	100
Students I	90	Students X	100
Students J	90	Students Y	100
Students K	65	Students Z	100
Students L	90	Students Z1	100
Students M	100	Students Z2	65
Students N	100	Students Z3	55
		Average	**87,5**

The results above show highest of students N=13 obtained 100% pass during their oral test. Followed by N=9 students with 90% and it went further where students N=2 obtained 65%, also N=2 with 55% and the lowest percentage obtained by students N=2 is 50%, while the average is **87,5%**. Therefore, the study has proven and concur with Joughin (2010:8) when state that oral assessment is a powerful tool and moment where the student is able to express knowledge without limited space of talk between lecturer and the student in a private assessment space. Kehm, (2001) in Joughin, (2010:8) once highlighted these words *"spoken word is written on the soul of the hearer with understanding", and the written word is only a pale shadow of "the living and animate speech of a man with knowledge"* (Joughin, 2010:8; Kehm, 2001:27). Students must be assessed in all types of assessment before declared competent or incompetent.

Table 2. Practical test (50 marks).

Students	Percentage %	Students	Percentage%
Students A	70	Students O	50
Students B	50	Students P	100
Students C	53	Students Q	53
Students D	50	Students R	100
Students E	67	Students S	50
Students F	60	Students T	50
Students G	50	Students V	73
Students H	50	Students W	53
Students I	83	Students X	53
Students J	57	Students Y	60
Students K	83	Students Z	53
Students L	100	Students Z1	100
Students M	100	Students Z2	50
Students N	50	Students Z3	50
		Average	**82.8**

Table 2 above presents the results of practical test. The results reveal that the highest percentage mark obtained by the students N=5 is 100%, followed N=2 with 83%, N=1 with 73% and N=1 with 70%. While other students attained N=1 with 67%, N=1 with 60%, N=1 with 57%, N=5 with 53% and lowest score is N=10 with 50% while the average is **82.8%.** Therefore, the study agrees with Mokhothu and Maimane, (2017); Maeko, (2012); Vilaythong, (2011) when mentions that practical work is teaching and learning activity that needs a full participation of students to interact with real materials of work and develop some skills on how to manipulate objects and perform accordingly (Mokhothu and Maimane, 2017:418).

Table 3. Investigation report (group work 20 marks).

Group	Percentage %
Group 1	**70**
Group 2	**80**
Group 3	**65**
Group 4	**65**
Average	**70**

Table 3 above reports the results of investigation report (group work). The results indicate group 2 obtained the highest percentage of 80%, followed by group 1 with 70% while group 3 and 4 achieved 65%. The total average of the investigation attained is **70%.** Therefore, the results agree with Slavin, (2015:9) when pronounce that the quality of group work is maintained through interaction and consistency of group members. Which encourage that all group members should engage and identify others problem area, then assist one another to overcome and achieve their goal with clear understanding.

8. Conclusion

In conclusion the research has proven that demonstration method promote student centred learning and allows students to be hands-on. It has further shown that student centred promote blended assessment which is oral, practical and investigation. Therefore, students need to be allowed to participate in full through their teaching and learning process to develop total understanding.

References

Chingombe, SI. (2013) Impacts of the Demonstration Method in the Teaching and Learning of Hearing Impaired Children. *Journal of Humanities and Social Science,* 12(1): 48-54
Chikuni, B (2003) The Teachers `Handbook. A practical approach to Teaching. Gwanda, Flame Publishers
Joughin, G. (2010) A short guide to oral assessment Available at http://www.leedsment.ac.uk/publications [Accessed 1 February 2018]
Kehm, B. (2001) Oral examinations at German universities. *Assessment in Education* 8, 25-31.
Maeko, MAS. (2013). Practical Activities in Civil Technology: A Case Study of Three Technical School in the Eastern Cape Province. Med Dissertation. Tshwane University of Technology.
Mokhothu, KG and Maimane, JR. (2017). Integration of Civil Technology Theory Content: Student' Practical work Perspective. Education and New Development 4th Ed. Lisbon, Portugal. ISBN:978-989-99864-3-5.
Slavin, RE. (2015). Cooperative learning in elementary schools, Education. *International Journal of Primary, Elementary and Early Years Education,* 3(13): 5-14
Vilaythong, V. (2011). The Role of Practical Work in Physics Education in Lao PDR. Umeå University, Sweden.

CURRENT SITUATION IN THE RESEARCH OF TEACHING ENGLISH GRAMMAR IN SLOVAKIA

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Abstract

The presentation provides a coherent survey of current developments in the field of teaching English grammar, based on the presentation and analysis of research findings in the Slovak educational context. Referring to Keith Johnson´s model of language learning as skill development, the author highlights some crucial problems associated with the development of declarative and procedural grammar knowledge. A theoretical analysis focusses on their possible causes from linguistic, psychological, and educational perspectives. The need for further research is emphasized by presenting numerous questions and stimuli for theoretical analyses and empirical research. The subsequent findings should underpin linguodidactic recommendations.

Keywords: Teaching English grammar, declarative knowledge, procedural knowledge, causes of crucial problems.

THE INFLUENCE OF GPA ON ACHIEVEMENT EMOTIONS

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Abstract

Emotions that are directly related to student's learning, classroom instruction, and achievement are termed as academic emotions (Pekrun et al., 2002). Students experience a variety of emotions in academic settings that influence their cognition and behavior and therefore their learning process. While it is clear that students frequently experience negative emotions, less is done to find out what trigger achievement emotions. The current study aimed to identify the relations between GPA and achievement emotions. Participants in this study were 800 high school students who were recruited randomly in 23 high schools in Kosovo. Achievement Emotions Questionnaire – Mathematics (AEQ-M; Pekrun, Goetz & Frenzel, 2005) was used to collect the data regarding the achievement emotions. On the other hand, GPA was calculated by summing all grades earned and dividing by number of courses completed. Similar to previous studies it was showed that GPA is an important factor for the model and therefore it is an important variable on predicting and explaining the achievement emotions. In this study, GPA showed to be positively related with enjoyment and pride, while was negatively related with anxiety, anger and shame. By identifying the contribution of GPA on achievement emotions, a good basis to develop a support strategy for students with negative achievement emotions is provided.

Keywords: Achievement emotions, GPA, high-school students.

1. Introduction

Emotions that are directly related to student's learning, classroom instruction, and achievement are termed as academic emotions (Pekrun et al., 2002). On the other hand, achievement emotions are defined as emotions that relates to achievement activities and their outcomes (Pekrun, 2006). Academic learning is considered achievement activity, while success or failure is considered as outcome. Based on this definition, between achievement emotion and mood exists a clear distinction (Pekrun, 2006), because achievement emotions have a specific referent, while moods have lower intensity and lack specific referent. Relying in the idea that emotions can be grouped based on two dimensions: valence and activation, there can be identified 4 different types of emotions, such as positive or negative and activating or deactivating emotions (Tellegen, Watson & Clark, 1999). Model presented by Pekrun, includes emotions that are part of each subcategory. According to this model, positive activating emotions are enjoyment, hope and pride; positive deactivating emotion is relief; negative activating emotions are anger, anxiety and shame; negative deactivating emotions are hopelessness and boredom. Contribution of Reinhard Pekrun in the field of academic and achievement emotions includes a detailed literature research, where he has found that anxiety was the one emotion reported most often, accounting for 15% to 25% of all emotions reported in studies. Anxiety was mentioned not only in relation to taking exams which is pretty self-explanatory, but also with reference to being in class or studying at home (Pekrun, 2002). Although, almost as often as negative emotions, students have reported positive academic emotions. Among positive emotions, enjoyment of learning, hope, pride, and relief, were mostly reported. Meanwhile, anger, boredom, and shame came usually after anxiety, when negative emotions are reported. Hopelessness was also reported less, but some accounts of this emotion involved reports about personal tragedies, including suicidal ideation relating to failing academic exams (Pekrun, 2002). All in all, this kaleidoscope of emotions is really important to be studied, due to the fact that is always influencing learning process and especially the motivation toward learning. However, other emotions are also relevant for academic achievement. For a long time, GPA is shown to be a really important predictor for several phenomenons as it was shown also to be predicted by some other factors. In different studies GPA was

related to several outcomes, but less is known about how different achievement emotions are related to GPA. The current study aimed to identify the relations between GPA and achievement emotions.

2. Methodology

2.1. Sample

Participants in this study were 800 high school students who were recruited randomly in 23 high schools in Kosovo. They were typical high school students with ages ranged from 16 to 18 with mean of 17.4 (SD=.51). Of the 800 hundred students, 60.4% (483) were females and 39.6% (317) were males. Only 28.9% (231) lives in village, while the other part consists of 71.1% (569) lives in city. In general, students report medium economic status. In this sample, the educational level of participants' father and mother is predominated by university level (43.25%) and followed by high school level of education (40.06%).

2.2. Procedure

All the questionnaires included in this study were translated and adopted in Albanian language. Following the instruction for adoption and standard back translation procedures recommended by Brislin (1970, 1986), a team of three PhD students in psychology with good English writing and communication skills, were engaged in the translation. The final version was revised by the independent researcher and then piloted in a sample of 20 students. Results of pilot test showed good understanding and good reaction toward test from student's side. Prior to collecting data, permission from the Ministry of Education in Kosovo to apply questionnaires in public high schools was ensured. Also, signed permission from parents was required for the students who were willingness to participate in the study. Only after having both permissions research group was visiting 23 high schools in Kosovo and gathered data. Participants received 6 pages, including writing explanation for the study, background and demographic questions and survey questionnaire. Before administration of the questionnaire students were informed about the aim of the research and how the measurement scales should be answered verbally as well. Scales were administered to students in groups, in a class environment. The procedure of filling questionnaires took 45 to 60 minutes. The survey questionnaires were anonymous and students were ensured that the data will be safe and kept confidential. Data collected were entered in Statistical Package for the Social Sciences (SPSS) version 20. With SPSS descriptive statistic analyzes were analyzed, while Structural Equation modeling was realized using Mplus, version 16.

2.3. Instruments

2.3.1. Achievement emotions questionnaire. Mathematics (AEQ-M; Pekrun, Goetz & Frenzel, 2005). The Achievement Emotions Questionnaire – Mathematics (AEQ-M) is a self-report questionnaire designed to assess students' achievement emotions experienced in mathematics (Goetz, 2004; Pekrun et al., 2003). Achievement Emotions Questionnaire contains 60 items and measures seven emotions: enjoyment, pride, anger, anxiety, shame, hopelessness, and boredom. This questionnaire contains three sections which measures class-related emotions (19 items), learning-related emotions (18 items), and test related emotions (23 items). Items are ordered in that way that consists with three blocks assessing emotional experiences before, during, and after being in achievement situations. This questionnaire was developed based on a program of quantitative and qualitative research that examined students' emotions experienced in diverse academic domains, including mathematics (Pekrun, 2006; Pekrun, Goetz, Titz, & Perry, 2002; Pekrun, Goetz, Perry, Kramer, & Hochstadt, 2004). "The item and scale statistics indicate that there is sufficient item score variation, and that item-total correlations are robust", (Pekrun, Goetz, Frenzel, p. 3, 2005). Good reliability of AEQ-M scales is shown with Alpha coefficients (Alpha = .84 to .92). Students rate their emotional experiences on a five point Likert scale from "strongly disagree" (1) to "strongly agree" (5).

2.3.2. Grade Point Average. Grade Point Average is seen as reliable and objective measurement of student's performance and achievement. The GPA is calculated by summing all grades earned and dividing by number of courses completed. By this way, GPA ensures that each academic institution will understand student's performance prior to and during their course of studies.

3. Results

We predicted a positive relationship between GPA and positive achievement emotions and negative relationship between GPA and negative achievement emotions. Based on the previous explanation, higher GPA means higher positive achievement emotions and lower GPA means higher negative achievement emotions. First, results show that GPA predicts significantly two positive emotions, such as enjoyment ($\beta = .24$, t (798) = 6.259, p < .001) and pride ($\beta = .25$, t (798) = 7.776, p < .001). On the other hand, GPA is shown to be significant predictor for all negative achievement emotions, such as anger ($\beta = - .27$, t (798) = - 4.627, p < .001), anxiety ($\beta = - .18$, t (798) = - 3.688, p < .001) and shame ($\beta = - .23$, t (798) = - 3.873, p < .001).

Table 1. Coefficient of the regression model for GPA.

	β	P value
Enjoyment	0.237	.000
Pride	0.251	.000
Anger	-0.268	.000
Anxiety	-0.179	.000
Shame	-0.226	.000

4. Discussion

The results from different studies found on literature provided satisfactory facts to raise hypothesis which predicted a positive relationship between GPA and positive achievement emotions such as enjoyment and pride, while a negative relationship between GPA and negative achievement emotions, such as anxiety, anger and shame. Results fully supported this pattern. Similar to previous studies it was showed that GPA is an important factor for the model and therefore it is an important variable on predicting and explaining the achievement emotions. In this study, GPA showed to be positively related with enjoyment and pride, while was negatively related with anxiety, anger and shame. Thus, it is clear that students with dominant negative achievement emotions are predisposed to have lower GPA. In contrast, students with higher GPA are students who experience more positive achievement emotions in school. Indeed, current results brings more light on the GPA and its effect on achievement emotions, which were not studied extensively before. Beside the test anxiety, that was found to be related with lower GPA (Castro & Rice , 2003), other achievement emotions, such as pride, shame, anger and enjoyment weren't explored for their relationship with GPA. Results shows that student with higher GPA tend to enjoy learning, class and test, as well as tend to feel proud with their success and achievement on class and test exams. On the other hand, students with lower GPA, are more predisposed to feel negative achievement emotions, such as anger and anxiety before and during the test, while shame after receiving test results, after exams and class presentations. Just encouraging students to abandon negative achievement emotions is not enough, even though it will be great step toward better emotional health. Each student has a reason why he or she feels in that way. Usually, in academic domain, the reason for feeling negative emotions is related to the unfulfilled need or failing to reach the desired success. Anyway, attempting to intervene and help students that are overwhelmed with negative achievement emotions without addressing the underlying reasons behind these emotions can be really ineffective. By identifying the contribution of GPA on achievement emotions, a good basis to develop a support strategy for students with negative achievement emotions is provided.

References

Brislin, R. W. (1970). Back translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*, 185–216.

Castro, J. R., & Rice, K. G. (2003). Perfectionism and ethnicity: Implications for depressive symptoms and self-reported academic achievement. *Cultural Diversity & Ethnic Minority Psychology, 9*, 64 –78.

Pekrun, R. (2006). The control–value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review, 18,* 315–341.

Pekrun, R., Goetz, Th., Frenzel, C. A. ,Barchfeld, P. & Perry, P. R. (2011). Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary Educational Psychology 36,* 36–48.

Pekrun, R., Goetz, Th. & Titz, W. (2002). Academic Emotions in Students' Self-Regulated Learning and Achievement: A Program of Qualitative and Quantitative Research. *Educational psychologist 37*, 2, 91 – 106.

Tellegen, A., Watson, D., & Clark, L. A. (1999). On the dimensional and hierarchical structure of affect. *Psychological Science, 10,* 297-309.

A STATISTICAL ANALYSIS ON THE FACTORS INFLUENCING MATHEMATICS ANXIETY IN UNDERGRADUATE STUDENTS OF MATHEMATICS AND ENGINEERING

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Abstract

Mathematics Anxiety (MA), the 'phobia of numbers', is related to poor performance in Mathematics. There are numerous studies that discuss a wide range of factors affecting Mathematics Anxiety in students at primary and secondary schools. Furthermore, there are some studies looking into MA in students of Psychology, Engineering and Nursing at a Higher Education level, see, for example (Alves et al. 2016; McMullan et al. 2012) and more references therein. However, we believe that this is the first work on MA in undergraduate students of Mathematics. Consequently, our purpose is to determine whether factors such as gender or ethnicity affect MA. Our main results are that there are significant differences between male and female students; there is a significant difference among students with three siblings or more, compared to students who have two siblings or less. Finally, we discuss the significant difference between the gender of the main family figure providing Mathematics support amongst students with a British and Non-British background.

Keywords: Mathematics anxiety, ethnicity, gender, mathematics, higher education.

1. Introduction

In the UK there has been an increasing need for employees with a strong mathematical background, yet there has been a decrease in the number of students who chose to continue to study Mathematics post-16. Comparatively, Japan has 84% of its students continuing with Mathematics post-16 whereas the UK only has 14% (Mansell, 2010). The reason behind the low levels of continuation of Mathematics has been associated with the growth of a "Mathematics Anxiety" (hereafter MA) culture within the UK (Frenzel et al., 2010; Sherman and Wither, 2003). MA is defined as 'a feeling of tension and anxiety that interferes with the manipulation of numbers and the solving of mathematical problems' (Richardson & Suinn, 1972). There are some causal factors which have been researched in other studies including; gender (Devine et al., 2012), ethnicity (Huntsinger et al., 2000) and family influences (Gonzalez-DeHass et al., 2005). Few articles contain data based in the UK and lacked discussion between the link of the listed factors above in British schools and universities. This study will research whether there are any correlations between the factors listed and whether they have a direct influence on MA in students of Mathematics and Engineering at a Higher Education institution within the UK.

1.1. Gender

There has been an extensive amount of research which has studied the differences between how males and females respond to MA. Many studies have determined that girls exhibit higher MA than boys (Hill et al,.2016, Devine et al,.2012, Meece et al,.1990). This suggests that fewer females will continue with Mathematics post-GCSE. In 2016 the ratio of men to women taking A-level Further Mathematics within the UK was 72.5:27.5 (Kirk, 2017). As a result, numbers further deplete at university where females who studied Mathematics and Engineering in 2013-14 were approximately 30% and 10% respectively (timeshighereducation.com, 2018). This infers that females experiencing MA are not only less likely to continue with Mathematics, but also avoid pursuing careers requiring quantitative skills (Hill et al,.2016).

This study will focus on gender-related findings in older students of Mathematics. While there has been research conducted on gender and MA in both primary (Vukovic et al., 2013, Newstead 1998) and secondary schools (Catsambis, 1994, Frenzel et al.,2010), there is little research on the impact post-GCSE. Consequently, this study will investigate gender-related findings on MA in Higher Education. Current findings suggest that despite the generally higher levels of MA in females, this has not made an impact on their performance. In fact, studies have proposed that their performance is similar to males and in reality, females have a greater mathematical potential than males (Devine et al., 2012). Little research contradicts this statement. However, Tella (2007) found that there was no significant relationship between academic achievement in gender. It was stated that in comparison to males, females were underperforming in Nigeria leading to the discussion of gender differences and attitudes in non-British cultures within the UK.

1.2. Ethnicity

In recent years, the migrant population has risen by approximately 565,000 since 2011 (BBC News, 2015). The resulting multi-cultural society has led to a range of different beliefs and attitudes towards Mathematics. This can have both positive and negative effects in one's development in Mathematics which may be a causal factor to MA. Positive aspects include diverse cultural beliefs towards Mathematics. For example, Huntsinger et al. (1993-1997) explained how Eastern countries understand the importance of enforcement of Mathematics from an early age. Ultimately, this will be reflected onto the child in their schooling environment. Huntsinger (1993-1997) studied whether different parental attitudes towards Mathematics could prevent the development of MA by comparing European American parents with Chinese Americans parents. Results suggest that parental practice of early training and discipline influences children's later performance in Mathematics. It was found that Chinese American interactions were longer with a greater emphasis on Mathematics. Thus, encouragement from parents was shown to be a great factor towards positive performance.

1.3. Family influences

Parents perceptions of the importance of Mathematics and students valuing Mathematics are positively correlated (Frenzel et al., 2010). This indicates that parents have the ability to aid their child's MA by supporting them. However, if they do not use their influence responsively, children may not perform well, possibly leading to MA. Some studies have shown that parents have pre-conceptions of their child's mathematical ability (Jacobs, 1991). These parental assumptions include gender stereotyping where their expectations are based on the career choice their child may be likely to proceed with. Hence, assumptions were not based on their child's achievement. Additionally, if parents display little confidence towards their child's mathematical ability, it can lead to MA due to poor self-esteem and a lack of motivation.

This study will research whether students in the UK who are from other cultures experience MA and if this is correlated with the support they may have received from their parents'. This will be explored by measuring whether students of Mathematics and Engineering received emotional support and whether they received support with their Mathematics work. Hence, developing their own attitudes in correlation with their personal heights of self-efficacy.

2. Methodology

A questionnaire was designed specifically to investigate whether gender differences, ethnic diversity and parental support amongst other factors had an effect on MA. An altered version of the official MAS-UK was included alongside a self-created version which was aimed to explore their confidence and general feeling towards Mathematics.

The opening section of the questionnaire enquired about general information in order to assist with potential causal factors. For example, the purpose of asking how many siblings a student had could influence levels of parental support. This could be due to many factors, including potential comparisons or even lack of time for support. On the contrary, this could be favourable for the participant to have a greater number of siblings, as they may support each other. Additionally, if students did have parental support a follow up question determined which parent supported them, if not both. This was related to the question of gender differences in MA.

Following the questionnaire there were two altered versions of the official MAS used in the UK (Hunt, Clark-Carter and Sheffield, 2011). This MAS described the act of Mathematics in everyday life and responses determined how anxious students may or may not feel doing these tasks. The reasons for these few modifications was to tailor them towards the target audience, undergraduates of Mathematics and Engineering. Observing the original list from Hunt et al. (2011), questions which were believed to be

irrelevant were removed, such as "counting the number of people in a room". However, using everyday Mathematics may be sometimes challenging for students as they no longer have non-calculator assessments and so may be out of practice. As Mathematicians and Engineers were likely to have a different level of ability in Mathematics, explicit questions were designed dependent on the subject they studied, although these differences were very minor.

This questionnaire researched some factors that involved questions that people may find too private to share. One example when this was applied was when questions regarding parents were asked. It was discussed that not all participants would have two parents, some may have one parent and equally they may have more than two. Hence, it was stated within the questionnaire for the student to decide who the two most prominent parental figures during their childhood were, and to ignore any questions concerning parent 2 if applicable. Moreover, it was discussed that some people may not have heteronormative, or nuclear, families but have same sex parents. To ensure this topic was covered sensitively, instead of labelling parents as mother and father, they were categorised as "parent 1" and "parent 2". As one of the contributing factors under investigation was whether the gender of the parent had any relation to MA in the student, the gender of parent 1 and 2 was asked, but a "prefer not to say" option was also available.

Furthermore, the discussion of ethnicity arose as a recurring theme when researching MA. General attitudes towards Mathematics in the West has allowed it to become 'socially acceptable in admitting to having a lower ability with numbers, in contrast to core skills such as reading and writing' (Chinn, 2009: 1). As one's ethnicity can be particularly broad, the response part of the questionnaire regarding ethnicity was altered to be specific for this study, focusing on differences between the East and West. Additionally, the questions based on ethnicity were expressed in a way that the participant could select the ethnic group they believed to be most affiliated with. This was to eliminate the possibility of someone not knowing their "official" ethnicity due to factors such as having a background of multiple heritages.

3. Analysis and results

We have designed two main outcome variables. The first is MAS which is based upon the scores of the MARS questionnaires published by Hunt et al., (2011) with some adaptations for undergraduate students of Engineering and Mathematics. The second one is MC which is based on the score of an original questionnaire which intends to study the confidence levels at the time of dealing with Mathematics. Let us note that there is a statistically significant relationship between these two outcome variables (Spearman's rho = 0.569, n=102, p-value<0.001). This was an expected outcome as it is common for students who lack confidence often experience anxiety.

As both MAS and MC are associated, we are only going to focus on investigating which factors have an effect on MC. However, the variable MC does not follow a normal distribution and hence a linear regression cannot be applied. Then, we transform the variable MC into a new binary variable, MCB, with values: '0 =confident' and '1=not confident'. The percentile 65 of the distribution of MC was decided as a threshold value between confident and not confident, since the mean, percentile 50 is understood as the normal levels of confidence.

Table 1. Means and Standard deviations by level of the factors Gender and Number of Siblings.

Variable	N	Mean	S.D.
Males	76	26.61	8.81
Females	26	30.04	6.39
No siblings	9	26.44	6.29
1-2 siblings	72	29.33	8.39
3-4 siblings	18	21.83	6.64
5-6 siblings	3	21.33	6.03

From Table 2 we can see that the factors Gender, Number of Siblings and the interaction factor Parent Ethnicity*Parent Support Gender are significant with a 95% level of confidence. This implies that there are significant differences among the levels of each of the factors. In particular, by assessing the MC values it can be stated that males score approximately 3.5 points on average less than females.

Furthermore, students with more than 3 siblings happen to score much lower than students with two or less siblings.

Table 2. Output of the Logistic Regression with MCB as the response variable.

Variable	B	SE	p Value	OR	95% C.I.
(Constant)	-2.06	0.74	.005		
Gender	1.507	0.632	0.017	4.515	1.31 – 15.59
Ethnicity	-0.280	0.872	0.748	0.756	0.14- 4.17
Year	-0.178	0.400	0.656	0.837	0.38 – 1.83
Number of Siblings	-2.173	0.678	0.001	0.114	0.03 – 0.43
Parent Ethnicity	2.224	1.141	0.051	9.243	0.99 - 86.53
Parent Support	0.289	0.652	0.658	1.335	0.37 – 4.79
Parent Support Gender	0.369	0.332	0.266	1.447	0.75 – 2.78
Student Motivation	-0.147	0.086	0.089	0.864	0.73 – 1.02
Subject	-0.423	0.890	0.635	0.655	0.12 – 3.75
Age	0.178	0.117	0.129	1.195	0.95 – 1.50
Parent Ethnicity*Parent Support Gender	-1.237	0.530	0.020	0.290	0.10 – 0.82

Model χ^2 = 20.161, df = 12, p =.259

Finally, the differences across the sample regarding the significant factor Parent Ethnicity*Parent Support Gender are illustrated within Table 3. Here, we can appreciate that students from a British background have received mathematical support mainly from a male figure, whereas students from other backgrounds have either received equal support from both male and female parents or did not receive any support at all.

Table 3. Bar chart explaining the relationship between parent ethnicity (Brit = British vs. NB = Non British).
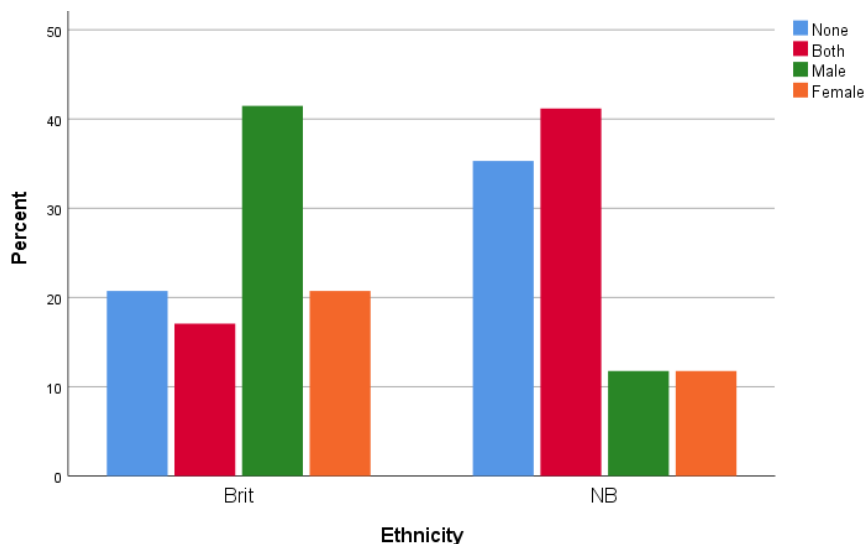
4. Conclusion

Mathematics Anxiety in undergraduate students of Mathematics and Engineering has been shown to be affected by the factors: gender, number of siblings and the interaction factor of parent ethnicity*parent support gender. Students from a British background received support predominantly

from a male family figure. This may be a potential cause of the gender unbalance in Engineering and Mathematics degrees and should be subject to further research.

As an application of this research, the Education policy should guarantee training on prevention of MA for parents, in order to reduce the parental support gender gap. Moreover, this intervention may lead to a reduction of the gender balance in undergraduate students pursuing a STEM degree.

References

BBC News. (2018). *Migrant population 'up 565,000'.* [online] Available at: http://www.bbc.co.uk/news/uk 31748422 [Accessed 4 Mar. 2018].

Catsambis, S. (1994). The Path to Math: Gender and Racial-Ethnic Differences in Mathematics Participation from Middle School to High School. *Sociology of Education*, 67(3), p.199.

Chinn, S. (2009). Mathematics anxiety in secondary students in England. *Dyslexia*, 15(1), pp.61-68.

Devine, A., Fawcett, K., Szűcs, D. and Dowker, A. (2012) "Gender differences in mathematics anxiety and the relation to mathematics performance while controlling for test anxiety", *Behavioral and Brain Functions*, 8(1), p. 33. doi: 10.1186/1744-9081-8-33.

Frenzel, A., Goetz, T., Pekrun, R. and Watt, H. (2010) "Development of Mathematics Interest in Adolescence: Influences of Gender, Family, and School Context", *Journal of Research on Adolescence*, 20(2), pp. 507-537. doi: 10.1111/j.1532-7795.2010.00645.x.

Frenzel, A., Goetz, T., Pekrun, R. and Watt, H. (2010) "Development of Mathematics Interest in Adolescence: Influences of Gender, Family, and School Context", *Journal of Research on Adolescence*, 20(2), pp. 507-537. doi: 10.1111/j.1532-7795.2010.00645.x.

Gonzalez-DeHass, A., Willems, P. and Holbein, M. (2005). Examining the Relationship Between Parental Involvement and Student Motivation. *Educational Psychology Review*, 17(2), pp.99-123.

Hill, F., Mammarella, I., Devine, A., Caviola, S., Passolunghi, M. and Szűcs, D. (2016) "Mathematics anxiety in primary and secondary school students: Gender differences, developmental changes and anxiety specificity", *Learning and Individual Differences*, 48, pp. 45-53. doi: 10.1016/j.lindif.2016.02.006

Hunt, T., Clark-Carter, D. and Sheffield, D. (2011). The Development and Part Validation of a U.K. Scale for Mathematics Anxiety. *Journal of Psychoeducational Assessment*, 29(5), pp.455-466.

Huntsinger, C., Jose, P., Larson, S., Balsink Krieg, D. and Shaligram, C. (2000) "Mathematics, vocabulary, and reading development in Chinese American and European American children over the primary school years.", *Journal of Educational Psychology*, 92(4), pp. 745-760. doi: 10.1037//0022-0663.92.4.745.

Jacobs, J. (1991) "Influence of gender stereotypes on parent and child mathematics attitudes.", *Journal of Educational Psychology*, 83(4), pp. 518-527. doi: 10.1037//0022-0663.83.4.518.

Ma, X. (1999) "A Meta-Analysis of the Relationship between Anxiety toward Mathematics and Achievement in Mathematics", *Journal for Research in Mathematics Education*, 30(5), p. 520. doi: 10.2307/749772.

Mansell, W. (2018). *Students taking maths post-16: Japan 85%, UK 14%.* [online] the Guardian. Available at: https://www.theguardian.com/education/2010/dec/14/maths-post-16-uk-poor-performance [Accessed 4 Mar. 2018].

Meece, J., Wigfield, A. and Eccles, J. (1990) "Predictors of math anxiety and its influence on young adolescents' course enrollment intentions and performance in mathematics.", *Journal of Educational Psychology*, 82(1), pp. 60-70. doi: 10.1037//0022-0663.82.1.60.

Newstead, K. (1998). Aspects of Childrens Mathematics Anxiety. *Educational studies in mathematics,* 36 (1,pp.53-71).

Ofsted., (2015) *A-Level Subject Take Up.* London: Ofsted, pp. 4

Richardson, F. and Suinn, R. (1972). The Mathematics Anxiety Rating Scale: Psychometric data. *Journal of Counseling Psychology*, 19(6), pp.551-554.

Sherman BF, David PW (2003) Mathematics Education Research Journal Vol. 15, No.2, pp.138-150

Tella, A. (2007). The Impact of Motivation on Student's Academic Achievement and Learning Outcomes in Mathematics among Secondary School Students in Nigeria. *Eurasia Journal of Mathematics, Science and Technology Education*, 3(2), pp.149-156.

Timeshighereducation.com.(2018).[online]Available at: https://www.timeshighereducation.com/sites/default/files/subject-of-study-by-level-and-gender-2013-2014-large.jpg [Accessed 16 Mar. 2018].

Vukovic, R., Roberts, S. and Green Wright, L. (2013). From Parental Involvement to Children's Mathematical Performance: The Role of Mathematics Anxiety. *Early Education & Development*, 24(4), pp.446-467.

A MULTI-ELEMENT APPROACH TO IMPROVING ACADEMIC ENGLISH WRITING INSTRUCTION IN JAPAN

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Abstract

Japanese university students typically find academic writing extremely difficult (e.g., Davies, 2000). This no doubt has much to do with their high school education, which traditionally has focused on grammar within a reading and English–Japanese translation framework, and recently has begun focussing more on conversational interaction. In neither case do students typically write more than two or three sentences for a single "composition". Thus, university writing instruction needs to tackle nearly all aspects of writing from a near-beginner level.

Experience and previous research show that aiming for a minimal level of fluency is necessary as a first step. For reasonably proficient English majors, experience likewise suggests that instruction focused on the structure of paragraphs and on simple essay structures beyond a single paragraph (such as five-paragraph essays) can be effective in a relatively short period of time.

However, analysis of essays submitted in Research Writing classes, as well as graduation dissertation drafts and final versions, suggests that the persistence of basic grammatical errors and other surface errors such as spelling mistakes is a more intractable issue, which so far has proven rather impervious to instruction.

This presentation describes a multi-threaded approach aimed at tackling this issue, in order to reduce the number of errors in drafts to a more manageable number.

The approach is characterized by: an initial focus on fluency and quantity, to foster basic proficiency and confidence; sustained corrective feedback; an input-output cycle; and an imaginative mix of technologies to allow a kind of coded, targeted corrective feedback to be delivered in an economical and therefore sustainable fashion.

Keywords: Japan, language education, writing instruction, errors, sociocultural theory.

1. Introduction

From a peak of about 2.5 million in the 1960s, Japan's population of 18-year-olds is now close to 1 million. Yet the number of tertiary educational institutions has risen, which means that competition for university places is looser than it has ever been, and average English proficiency (as measured by mock TOEIC scores) of entrants is falling rapidly (Nippon.com, 2015).

The author teaches at a provincial university of about 2,100 students administered by the local government. It is generally considered to be of a fairly high academic level, though not as high as that of the nearby nationally administered university. The Department of English Language & Literature (henceforth English department) has an intake of 45–50 students per year, as well as a very small number of students on Masters and doctoral programmes.

Teaching academic writing to Japanese university students presents a major challenge. The traditional focus in high schools is the learning of grammar and vocabulary through reading. More recently, there is a focus on communication, narrowly defined as conversation. Neither in the past nor in the present is it usual to write compositions of more than two or three sentences, and these compositions tend to be on everyday topics, such as what the student did in the holidays. In addition, although quite a large number of high-school classes are devoted to grammar explanations, writing grammatical sentences represents a major challenge to students. It seems that little grammar has really been internalized.

A common approach in English departments in Japanese universities is what might be recognized in many western countries as a process approach (Emig, 1971; Horowitz, 1986), with some adjustments made in recognition of Japan's unique circumstances. This is also the overall framework in the author's department. This approach has had some successes, in the author's view. Many students have

developed a reasonable grasp of how to structure an essay. However, numerous problems still exist at the sentence level, and the number of errors is too large to be handled in a reasonable way simply by giving feedback on drafts of essays and graduation papers.

Accordingly, the present paper summarizes some changes that have been introduced over the last few years, both in the curriculum and in the author's classes, to address this issue. Readers will notice the presence of transcription and dictogloss (text reconstruction), two techniques clearly based on imitation (Clark, 1977) that reduce the amount of creativity required of students. It is considered that such activities are important as complements to the more creative activities of original sentence generation and serve as ways of providing models to students available to be internalized, playing a similar role to model dialogues in a speaking curriculum.

2. Writing quantity and fluency

A major problem that becomes evident to any teacher when first teaching a writing class is a lack of fluency. It is not uncommon to find a 5- or even 10-minute writing session—even on an easy topic like *My Summer Vacation*—yielding a single sentence. In addition to an inability to generate much content, it is common to see students erasing everything they have written and starting again, but then not having enough time to complete even a single sentence. This likely signifies a basic lack of confidence in writing, to a large extent attributable to a lack of experience thereof. In the same way as extensive reading advocates claim that the best way to improve reading ability is to do a lot of reading (e.g., Day & Bamford, 1998), advocates of extensive writing (e.g., Lavin & Beaufait, 2003) suggest that frequent writing should be a priority. This also is consistent with Ellis's (2002, 2018) call for a fluency-first curriculum, which is justified by the idea that explicit teaching is necessary, but that it works well only when students have enough lexis to start an implicit process of rule extraction that the explicit teaching can supplement.

Accordingly, all students in the department are required to create their own blog in approximately the third week of their first semester in the department. They are required to write approximately two book reviews a week (see also the section on reading below) as well as diary posts. This department-wide requirement continues for three semesters, and thereafter continues for some students depending on which classes they take.

3. A focus on input

Fundamentally, all language acquisition theories insist on the importance of abundant comprehensible input (e.g, Krashen, 1982). This is something that is generally acknowledged to be sorely lacking in the Japanese secondary English curriculum. (Research by Rob Waring indicates that the quantity of English encountered in secondary textbooks in Japan is approximately half that in South Korea and one-sixth that in Mexico.) Accordingly, the department now requires students to read approximately 100 English books in the students' first semester. These can be short and easy graded readers or even leveled readers (children's books from the UK or other English-speaking country); the main purpose is to build a habit of reading English. In the second and third semesters, the recommended difficulty level of the books is raised and the number of books is correspondingly reduced. Thereafter, students are encouraged, but not in a structured, department-wide way, to continue reading, with the unofficial target being a total of 1,000,000 words by graduation. The majority of students read less than half that total, but recently a small number of students have appeared who have exceeded that total.

A key feature of the extensive reading programme is that it features an input–output link: Students read books and write blog posts about the same books. Thus, as Plakans and Gebril (2012) point out, the books not only provide a topic and content for the posts but also serve as a language repository. Students are strongly encouraged not only to summarize the content and comment on the book but also to transcribe short excerpts of the book. This exercise, while superficially a trivial one, requires students to hold language material briefly in memory before retrieving it, and thus is similar to activities like dictation and read-and-look-up (Nation, 1991).

4. Dictogloss

Students are also given periodic dictogloss (Wajnryb, 1990) exercises. These are somewhat similar to dictation, in that students have to reproduce a text that has been read aloud to them. The main difference is that a whole text (for example one paragraph) is read aloud several times without pauses between sentences. Students are thus unable to write down the passage as it is read aloud, and the passage

is too long to be memorized. Therefore, they need to use their memory and existing knowledge of vocabulary and grammar to reconstruct the passage. Another difference between dictogloss and dictation is that in dictogloss students are encouraged to talk to their classmates between readings. Thus, they can leverage each other's knowledge and abilities and, by engaging in a kind of verbalization called languaging (Swain, 2009; Swain et al., 2009), express and negotiate their understanding of the meaning of the original passage and the appropriate linguistic means of expressing that meaning.

5. Providing targeted corrective feedback

There are now countless studies available on corrective feedback on writing, especially since Truscott's (1996) highly controversial call for the abandonment of corrective feedback. An emerging consensus suggests that feedback should be selective (e.g., Ferris, 2011) and sustainable (and of course sustained) (Carless, et al., 2010).

Feedback has always been sustained to a certain degree in the department in the sense that writing classes are offered over five continuous semesters, an unusually high number that is not true of other skills classes such as reading. Unlike other classes, writing classes usually contain fewer than 20 students, often around 15. The sustained nature has been boosted in recent years by the previously mentioned incorporation of blogging into a first-semester general skills class, with regular corrective feedback (via blog comments). The introduction two years ago of Extensive Reading & Listening classes in the second and third semesters—also featuring blogging centred on book reviews, and also with feedback in comments—has greatly increased the total quantity of feedback. In addition, students in the author's third- and fourth-year seminars also write book reviews in the same way, also with feedback via comments.

5.1. Custom website

In addition to the feedback offered across a large number of classes, students in the author's writing classes and in his fourth-year seminar (where students write their graduation thesis) use a custom website featuring micro-posts focused on specific types of error. This enables clear targeting of feedback while facilitating sustainability. (It is not necessary to write an explanation targeted to the individual student each time.) This type of feedback has something in common with coded feedback—which can use shortened forms such as S.V (subject–verb agreement; e.g., Salimi & Valizadeh, 2015) or colours to represent different kinds of error (e.g., Shvidko, 2015)—in that it leads students towards reflection on their specific error as an instance of a category of error, thus leading to greater engagement and deeper processing. In time, it can be expected that students will become aware of the categories of error that they are most prone to.

The main advantage of the computer-mediated nature of the feedback described is that it is possible to add extra information to the feedback without threatening its sustainability. This is in contrast to paper-based feedback where any attempt to add extra information for clarity and to facilitate uptake of the feedback adds to the time required, defeating the object of the code-based feedback. The author usually includes an example sentence featuring the error type under consideration, along with a corrected version.

There follows the full text of an example post titled ***Because* or *Because of*?**:

Consider this sentence:

The content of English lessons tends to be rather inflexible, because ~~of~~ the textbooks used in

schools are limited to those approved by MEXT.

The rule to remember is:

> *because of + noun phrase (名詞句)*[1]SEP
> *because + clause (節)*

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The post is short, so can be referred to quickly while reading through a draft that has been commented on by the teacher, and has an illustrative example sentence. It also has a rule, in order to encourage conceptual thinking on the part of the student.

Here is another example post, one titled **Naked Singulars** that is linked to very frequently:

Probably the most common error in essays is the naked singular, i.e. a singular noun with no article. That is OK in the case of abstract nouns like peace or uncountable nouns like flour, but usually a singular noun without an article is a problem.

There are two possible ways to solve the problem: make the noun a plural, or add an article as appropriate. Of course, you need to think about what article is appropriate. Here are some examples:

(1) This part is written from main character's perspective. >>>
*This part is written from **the** main character's perspective.*

(2) This character has important role in the story. >>>
*This character has **an** important role in the story.*

(3) I like apple. >>>
*I like **apples**.*

To revise articles, please refer to this comic *[linked],* by Yuta Matsutani.

This post is rather longer than the majority of posts on the site. It is worth paying attention to a number of features:
(a) It features a link to further information. This is something that it would be rather costly to provide in other forms of feedback.
(b) It features clickable tags such as *nouns*, *number*, *determiners*, and *articles*. This encourages students to explore related posts. Choosing to click on a tag, and deciding which one to click on, necessitates further reflection on the nature of the error committed by the student in terms of error categories. As recommended by Spiro and colleagues (e.g., Spiro et al., 1995), this facility to follow multiple paths through a body of information, leading to multiple encounters with the same information but in slightly different contexts, may be the best way of gaining understanding of knowledge for which there is no generally accepted or definitive explanation.
(c) It does not focus only on sentences with a missing definite article, but summarizes a more general notion, namely that most English singular nouns in most cases resist nakedness, or, expressed differently, attract a determiner of some kind. In this way, the approach is in line with current sociocultural approaches (e.g., Lantolf & Poehner, 2014).
Thus, in addition to enabling fairly rapid navigation of feedback, the site also enables deeper exploration of issues commonly encountered with students' writing, through guided search or directed browsing (Bates, 1989).

5.2. Google docs
A paper-based workflow would necessitate laborious and error-prone transcription of URLs. To avoid this, the system involves the use of another tool, Google Docs, of which the margin comments feature is used to add the URLs. (Google Docs/Drive has also featured in a number of recent studies (e.g., Ebadi & Rahimi, 2017) as a tool for delivering feedback, but to my knowledge it has hitherto been used only to deliver custom feedback rather than for links to pre-composed feedback.) The author maintains a note containing a list of the most frequently used URLs for rapid pasting. It is a feature of this system that no explanations are added to the URLs: a key point is that the linked explanations are written with sufficient clarity and detail to enable the students to understand the explanation. Another point is that the effort required to click on a link and read an explanation that is not focused on the student's specific example, while not a major one, should be sufficient to make the feedback memorable to some degree.

References

Bates, M. J. (1989). The design of browsing and berrypicking techniques for the online search interface. *Online Review*, *13* (5), 407–424. http://doi.org/10.1108/eb024320

Carless, D., Salter, D, Yang, M. & Lam, J. (2010). Developing sustainable feedback practices. *Studies in Higher Education, 30* (5), 1-13.

Clark, R. (1977). What's the use of imitation? *Journal of Child Language, 4* (3), 341–358. http://doi.org/10.1017/S0305000900001732

Davies, R. J. (2000). *The Academic Writing of Japanese Students of English: Contrastive Rhetoric and its Implications for an Integrated Approach to Composition Pedagogy*. Doctoral thesis, University of Wales, Bangor.

Day, R. R., & Bamford, J. (1998). Extensive reading in the second language *classroom*. Cambridge, U.K.; New York: Cambridge University Press.

Ebadi, S., & Rahimi, M. (2017). Exploring the impact of online peer-editing using Google Docs on EFL learners' academic writing skills: A mixed methods study. *Computer Assisted Language Learning, 30* (8), 787-815.

Ellis, R. (2002). The place of grammar instruction in the second/foreign language curriculum. In E. Hinkel, & S. Fotos (Eds), *New perspectives on grammar teaching in second language classrooms* (pp. 14–34). London: Routledge.

Ellis, R. (2018). Towards a modular language curriculum for using tasks. *Language Teaching Research, 22*, 136216881876531–22. http://doi.org/10.1177/1362168818765315

Emig, J. A. (1971). The composing processes of twelfth graders. Urbana, Ill., National Council of Teachers of English.

Ferris, D. (2011). *Treatment of error in second language student writing* (2nd ed.). Ann Arbor: University of Michigan Press.

Horowitz, D. (1986). Process, not product: Less than meets the eye. *TESOL Quarterly, 20* (1), 141. doi:10.2307/3586397

Krashen, S. D. (1982). *Principles and practice in second language acquisition*. New York, NY: Pergamon.

Lantolf, J. P., & Poehner, M. E. (2014). *Sociocultural theory and the pedagogical imperative in L2 education: Vygotskian praxis and the research/practice divide*. New York, NY: Routledge.

Lavin, R. S., & Beaufait, P. A. (2003). Ezboard as a medium for extensive writing in Japanese tertiary EFL classes. *Language Issues, 9* (1), 37-59.

Nation, I. S. P. (1991). Dictation, dicto-comp and related techniques. *English Teaching Forum, 29* (4), 12-14.

Nippon.com. (2015, March 16). *Universities Struggle to Cope with Shrinking Population and Globalization.* Retrieved from https://www.nippon.com/en/features/h00095/

Salimi, A., & Valizadeh, M. (2015). The effect of coded and uncoded written corrective feedback on the accuracy of learners writing in pre-intermediate level. *International Journal of Applied Linguistics and English Literature, 4* (3). doi:10.7575/aiac.ijalel.v.4n.3p.116

Shvidko, E. (2015, May 1). Written feedback: Using color-coded comments. *TESOL Blog*. Retrieved May 22, 2018, from http://blog.tesol.org/written-feedback-using-color-coded-comments/

Spiro, R. J., Feltovich, P. J., Jacobson, M. J., & Coulson, R. L. (1995). Cognitive flexibility, constructivism, and hypertext: Random access instruction for advanced acquisition in ill-structured domains. In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism in education*. Hillsdale, NJ: Lawrence Erlbaum.

Swain, M. (2009). Languaging and second/foreign language learning. *The Language Teacher, 33* (7), 14-17.

Swain, M., Lapkin, S., Knouzi, I., Suzuki, W., & Brooks, L. (2009). Languaging: University students learn the grammatical concept of voice in French. *Modern Language Journal, 93* (1), 5-29.

Truscott, J. (1996). The case against grammar correction in L2 writing classes. *Language Learning, 46* (2), 327-369. doi:10.1111/j.1467-1770.1996.tb01238.x

Wajnryb, R. (1990). *Grammar dictation*. Oxford, UK: Oxford University Press.

MATHS PROBLEMS IN PSEUDO-CODES COMPARED TO COMPUTER USAGE

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Abstract

Three groups of BSc students of Informatics were tested on the first week of their studies at the University of Debrecen, Hungary. In the test, we presented four elementary maths problems in pseudo-codes, and students were asked to answer the question "What does the following program do?" Beyond measuring the students' results in the test, our question was how the time students spend on computers and mobile devices functioning as computers affects their results in solving these problems. Differences were revealed between the three groups of students considering their scores in the test. It was further found that the more time they use computers their results the better, while, on the contrary, the more time they spend on their mobile devices the results are the lower. Those students' results were the lowest who were heavy mobile users and no significant differences were found between the average and the occasional users. We can conclude that computational thinking and algorithmic skills are not predefined by birth, not the privilege of born in the digital era, of being hooked to mobile devices. These skills can be gained by learning, practicing, coaching, in general, with the help of teachers armed with all the components of TPCK (Technological Pedagogical Content Knowledge) and with the belief in the incremental nature of sciences.

Keywords: Algorithmic skills, maths problems, pseudo-codes, computers, mobile device.

1. Introduction

The first-year students of Informatics of the University of Debrecen, Hungary were tested on their first week of tertiary studies. The timing plays an important role in the testing process, since the results of our project (Csernoch et al, 2015; Csernoch et al, 2018; Csernoch & Biró, 2018) would predict the level of the students' computational thinking (Wing, 2006), algorithmic skills, and real-world computer problem solving abilities. In general, how they are prepared for higher level studies in Computer Sciences and Informatics (CSI). While, on the other hand, we can measure how the students leave secondary education, how primary and secondary education prepare students for studies in CSI, how much tertiary education can rely on previous knowledge.

Furthermore, the questions were (1) how the digital devices affect the students' decoding abilities, how they can word the essence of short pseudo-codes with the content of elementary math problems (2) and how the digital natives are able to take advantage of skills which are assigned to them, according to some of the educators (Prensky, 2001), by birth. The effects of the digital devices on the problem-solving abilities of the digital natives evoked a heated debate. While Prensky stated that the students of the Z-generation do not need any formal CSI education, and based on this reasoning, in several countries, there is hardly any officially organized CSI education. On the other hand, several researches proved that the pattern is not that simple; owing the devices and considering them as the extension of hands do not improve the students' computational skills (Kirschner & De Bruyckere, 2017; Kirschner et al, 2006; Csernoch, 2017). Beyond that it has also been proved that all the aspects of TPCK must be present in the digital learning process to be effective and efficient (Mishra & Koehler, 2006; Chen et al, 2015). In these circumstances we were interested to see how first year students of Informatics can solve elementary maths problems presented in computer-related forms.

Our hypotheses are the following:

[H1] There is no significant difference between the students' results in the three groups.

[H2] High computer-usage does not aid math-related algorithm-based problem-solving.

[H3] High mobile-device-usage does not aid math-related algorithm-based problem-solving.

2. Methods

2.1. Sample

The first-year students of the University of Debrecen, Faculty of Informatics were tested at the beginning of their tertiary studies. The faculty runs three majors: Software Engineering (SOE), System Engineering (SYE), and Business Informatics Management (BIM), where the conditions of acceptance to the university are the same, based on the Hungarian Maturation Exams (Csernoch et al, 2015; Csernoch et al, 2018; Csernoch & Biró, 2018; Maturation exam, 2017).

To reveal how the computer and mobile usage influences the students' decoding skills, three groups of intervals were defined according to the time spent on these devices functioning as computers. We must emphasize here that not the overall time spent on mobile devices were asked but the time mobile devices were utilized as computers. For each device three further subgroups were defined: c5, c2, c1 and m5, m2, m1, for computers and mobile devices, for at least 5 hours a day, 2 hours a day, or less, respectively.

To analyze the computer- and mobile-time results (the time spent on these devices) for each course – SOE, SYE, and BIM –, device and time subgroups (c5, c2, c1, m5, m2, m1), first, the students' average results were calculated (Table 1) for each subgroup (Table 2 and Table 3).

Beyond analyzing the students' average results in the presented tasks, a ranking was set up based both on the computer-time and mobile-time groups, to see the tendencies how the device-time influences their performance. The best results were ranked as first, while the lowest as third.

2.2. Problems

In this section of the test four elementary school maths problems were presented in pseudo-codes. The question was "What do the following programs do?", and the students were expected to answer with natural language sentences. Tasks A and B were geometric problems. Task A is to check whether the triangle is a right triangle, while Task B, whether a point is on the line. Task B can also be interpreted as an algebraic – division – problem. Both solutions were accepted. In Tasks C and D sequences of additions and subtractions with two constants were presented, to swap the content of the two variables.

Figure 1. Elementary maths problems presented in pseudo-codes.

```
A, B, C
If A²=B²+C² or B²=A²+C² or C²=A²+B²
    then "yes"
    else "no"
If end.

              A
```

```
A, B, X, Y
If A*X+B=Y
    then "yes"
    else "no"
If end.

              B
```

```
A, B
A=10, B=24
A=A+B
B=A−B
A=A−B

              C
```

```
A, B
A=56, B=26
A=A−B
B=A+B
A=B−A

              D
```

3. Results

The students' average results (Table 1) clearly indicate that they had problems solving these elementary tasks. However, significant differences were found between the three groups (p=0.000; H1 rejected). In this aspect the SOE students' results were the highest, followed by the SYE students, and the BIM students' average results were the lowest.

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Table 1. The average results (%) of the students of Informatics in the decoding elementary maths problems presented in pseudo-codes.

	N	right triangle	point on line	swap1	swap2
SOE	120	48.61	20.00	53.89	50.83
SYE	103	37.80	9.28	46.39	47.08
BIM	97	19.59	8.25	19.59	18.21

Considering the geometric problems, in general, no significant differences were found between the three computer-time groups (right triangle p=0.338, point on line p=0.833). However, we must call attention to the extremely low results in the point on line task. With the swap problems, the c1 group, those students who spend the less time on computers, achieved significantly lower results. Furthermore, we revealed that there is interaction between the computer-time and the course, however significant differences were only found between the courses (p=0.000).

Table 2. Multivariate analysis of variance (MANOVA) table of the computer-time and the students' results in the test.

computer	N	right triangle	point on line	swap1	swap2
SOE		*p=0.978*	*p=0.240*	*p=0.002*	*p=0.040*
c5	50	46.67	18.67	54.67	53.33
c2	62	50.54	20.97	58.06	51.61
c1	7	38.09	23.81	4.76	19.05
SYE		*p=0.873*	*p=0.446*	*p=0.001*	*p=0.016*
c5	47	44.19	13.18	51.94	52.71
c2	51	33.33	6.00	42.00	42.67
c1	5	25.00	8.33	41.67	41.67
BIM		*p=0.013*	*p=0.879*	*p=0.141*	*p=0.268*
c5	32	26.04	6.25	28.13	25.00
c2	52	15.38	10.90	19.23	18.59
c1	11	21.21	3.03	0.00	0.00

In the comparison of the three mobile-time groups, in all the four tasks the m5 group results were significantly lower than the others. Considering the interaction of the mobile-time and course together, we found a weak interaction. This can be interpreted that the mobile-time weakens the significant differences between the three groups.

Table 3. Multivariate analysis of variance (MANOVA) table of the mobile-time and the students' results in the test.

mobile	N	right triangle	point on line	swap1	swap2
SOE		*p=0.154*	*p=0.068*	*p=0.937*	*p=0.879*
m5	27	32.10	14.81	46.91	43.21
m2	50	58.00	17.33	56.00	53.33
m1	41	50.41	27.64	56.10	52.85
SYE		*p=0.010*	*p=0.889*	*p=0.542*	*p=0.163*
m5	23	23.19	11.59	31.88	24.64
m2	52	34.69	6.80	53.74	54.42
m1	28	57.33	12.00	45.33	53.33
BIM		*p=0.982*	*p=0.363*	*p=0.289*	*p=0.734*
m5	42	20.63	4.76	19.05	19.05
m2	36	19.44	12.04	20.37	17.59
m1	19	17.54	8.77	19.30	17.54

As it was mentioned the section of the methods, for both device groups a ranking method was applied to see the tendencies based on the average results of the subgroups defined on the device-time. Considering the computer-time, in the case of the SOE students the rank of the c2 group, while in the case of the SYE and BIM students the rank of the c5 group was the best.

Figure 2. The ranking of the computer-time for the three courses and the average ranking of them (G3).
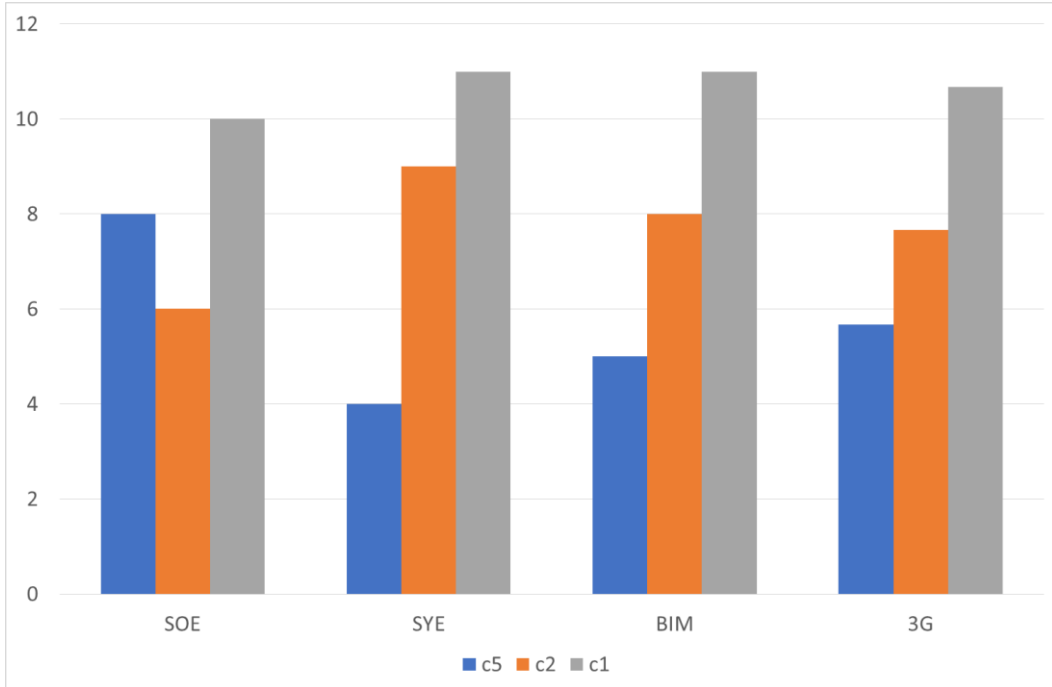
While the computer-time has a positive effect on the students' decoding skills, the ranking of the mobile-time in the SOE and SYE groups clearly reveals that m5 has a negative effect on the students' results in this type of tasks, and there is no difference between the m2 and m1 groups. The BIM students' ranking is somewhat different from the other two groups, but in this case, we must be careful in wording conclusions, because the average results of these students were extremely low (Table 1).

Figure 3. The ranking of the mobile-time for the three courses and the average ranking of them (G3).

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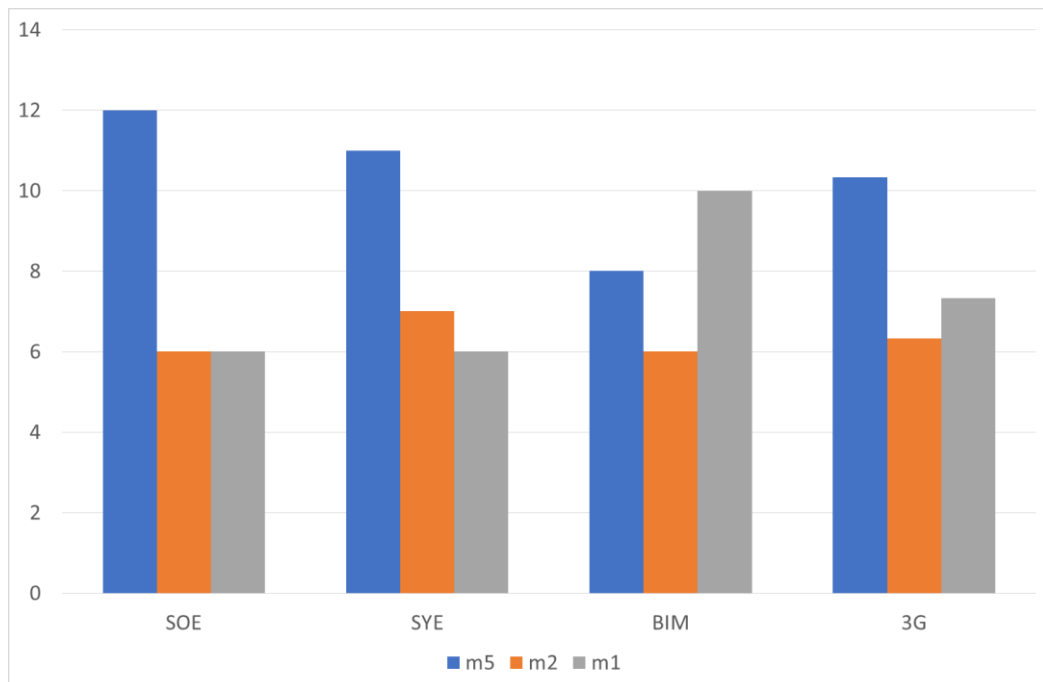
4. Conclusion

In the comparison of the three groups of first-year students of Informatics, we have found that there is significant difference between (Reject H1) the decoding skills of them.

Furthermore, we have revealed that the computer-time and the course together affect the students' performance. In the case of mobile-time the significant difference between the courses is still detectable but weakened.

In general, we can conclude that the time spent on computers has a positive (Reject H2), while spent on mobile devices has a negative effect on the students' decoding skills. The heavy mobile-usage does not support computer related maths problem-solving (Accept H3).

Our results make it clear that these algorithm skills must be gained through practice, they are not assigned by birth. The use of computers might have a positive effect, but the teachers cannot rely only on these devices, they should be well prepared in all the aspects of TPCK.

References

Chen, J. A., Morris, D. B. and Mansour, N. (2015). Science Teachers' Beliefs. Perceptions of Efficacy and the Nature of Scientific Knowledge and Knowing. In *International Hand-book of Research on Teachers' Beliefs*. (Eds.) Fives, H. & Gill, M. G. Routledge, 370–386.

Csernoch M., Biró P., Máth J. and Abari K. (2015). Testing Algorithmic Skills in Traditional and Non-Traditional Programming Environments. *Informatics in Education:* an international journal 14:(2) pp. 175-197.

Csernoch M. and Biró P. (2018). Algorithmic skills vs. time spent on computers and mobile devices. International Conference on New Horizons in Education INTE 2018, Paris. Accepted.

Csernoch M., Biró P., Csapó G. and Sebestyén K. (2018). Are digital natives spreadsheet natives? The European Spreadsheet Risk Interest Group Conference EUSPRIG 2018, London. Accepted.

Csernoch, M. (2017). Thinking Fast and Slow in Computer Problem Solving, *Journal of Software Engineering and Applications*. Vol.10 No.01 (2017), Article ID:73749,30 pages 10.4236/jsea.2017.101002

Maturation Exam (2017). Hungarian Maturation Exams in Hungarian. Magyarországi Érettségi vizsga. Informatics. Retrieved March 21, 2018 from https://www.oktatas.hu/kozneveles/erettsegi/feladatsorok.

Kirschner, P. A. and De Bruyckere, P. (2017). The myths of the digital native and the multitasker. *Teaching and Teacher Education*. 67 (2017), 135–142.

Kirschner, P. A., Sweller, J. and Clark, R. E. (2006). Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching. Educational Psychologist, 41(2), 75–86.

Mishra, P. and Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A new framework for teacher knowledge. Teacher College Record, 2006, 108(6), pp.1017-1054.

Prensky, M. (2001). Digital Natives, Digital Immigrants, From On the Horizon (MCB University Press, Vol. 9 No. 5, October 2001), Retrieved March 21, 2018 from http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf

Wing, J. M. (2006). Computational thinking. *Communications of the ACM*, 49(3), 33–36.

FLIPPED CLASSROOM, C.L.I.L. AND CLASSROOM SETTING: INNOVATIVE LEARNING EXPERIENCES IN AN ITALIAN PRIMARY SCHOOL CLASS

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Abstract

The present paper briefly illustrates an action research carried out in the school years 2015-16/2016-17 in a full-time primary school, located in Fiumicello, a small town in the North East of Italy. The pedagogical practices adopted have involved a 4th and then a 5th grade class.

The elements of innovation have concerned both the introduction of some C.L.I.L. (Content and Language Integrated Learning) and flipped classroom modules and the organization of the classroom setting with the desks shaped as square islands. The choice of both these methodological frameworks has consequently led to a constant use of the cooperative learning and of a teaching approach based on learning by doing, the implementation of tasks in groups and in peer-to-peer mode, in a context of an assisted laboratory, greater use of ICT, a substantial change in assessment practices.

The learning design and the learning experiences have been evaluated through the employment of two tools: rubrics for assessment and continuous observations recorded on a logbook.

For both the learning frameworks the experience has highlighted pros and cons results, with a large majority of the former, which we can summarise as follows. Firstly, longer periods are needed to run the same amount of content of a "traditional" class, even if pupils develop more skills and competencies, necessary for a lifelong learning. Despite the fact that there are more chaos and noise in the classroom, the sedentary lifestyle at school is reduced and pupils have a more rapid perception of the passing of time. Thus, children are more motivated and involved. Although teachers need longer time to plan the activities, the learning pathways are more individualized. Finally, an improvement of the skills in the foreign language, due to the C.L.I.L. approach only, has been recorded among the majority of the students.

Keywords: C.L.I.L., flipped classroom, classroom setting, primary school, action research.

1. Participants and objectives

The participatory action research here described was carried out in the school years 2015-16/2016-17 in Fiumicello's primary school, which is located in the Friuli Venezia Giulia region (North East of Italy). The school is a full-time school and it is placed in a small town in the countryside. The class involved was a 4th and then 5th grade and it was made up of 28 children. In Italian primary schools, full-time students stay 40 hours a week, in our case 8:30 to 4:30, that is 8 hours a day Monday to Friday.

There were two teachers committed in the "new" practices. Every year they had some pedagogical and disciplinary training. In the last year, both followed a Flipped Classroom course at the University. One of them had the opportunity to visit some Finnish, Estonian and English schools, but also to attend an intensive C.L.I.L. (Content and Language Integrated Learning) course in Ireland, thanks to some Erasmus+ mobility.

In the last two years of the primary school, the teachers agreed on the special regional programme C.H.O.I.C.E.S. (Create Higher Opportunities and Increasing Competences for European Students/Schools) with the aim of putting into action the European best practices benchmarks experienced during the Erasmus mobility of the school staff.

However, the most important purpose of the study was to motivate the students and improve their skills through "new" and innovative teaching and learning frameworks, overcoming the traditional face to face lesson and then to discuss the results within the regional community of teachers who had agreed on the programme.

2. Approaches and strategies

Describing an action research on the pedagogical practices adopted in a classroom is describing a process that in this study started when the students were in the 1st grade. Since then, the two teachers of the class have been involved in finding out strategies and approaches in order both to make their pupils feel good at school and develop their abilities and skills.

The main strategies carried out were three: the re-organization of the classroom setting and the introduction of both C.L.I.L. and Flipped Classroom modules. While the re-organization of the space inside the classroom was studied and developed throughout the five years of the primary school, the pedagogical frameworks mentioned above were adopted only in the 4th and 5th grade, after attending the courses and the relevant experiences abroad.

According to Weyland (2017; p.150), "[…] the process of innovation in schools cannot be generalized, but, rather, is the result of very concrete ideas and actions in which both pedagogy and architecture play an equally essential role". Indeed, the teachers worked both on the didactic process of teaching/learning and on the organization of the classroom space, giving to the latter the same importance and role of the former.

2.1. Classroom setting

The first idea was that of creating a good setting inside the classroom, since there is literature confirming that the educational environment and seating arrangement influence students' learning attitudes and educational outcomes (Park & Choi, 2014).

Due to the presence of a big number of students in the room, small spaces and no possibilities to purchase new furniture, the teachers tried to re-organize the desks in an efficient way; each year the desks were arranged in very different shapes, always paying attention to the strict safety rules inside the school. As stated by Weyland (2017; p.154), to plan school spaces is never easy, "it is a never-ending game, with an infinite succession of acts. It is a project for a time that will come". And that time came in the 5th year when they managed to find the best solution for them: desks shaped as square islands (groups of 4 desks).

Defining the relationship between space and didactics was a very difficult task, because of the safety rules inside the school, in case of emergency, the structure of the room, the old furniture, but also due to didactic issues. Indeed, there were two main problems: moving all the time the desks in different shapes, according to the type of activity in which they were involved, was not possible for noise and time reasons; shaping the desks to look like square islands created differences among the students when it came to watching the blackboard.

However, this was considered the most effective and efficient because it was the most suitable to constantly promote cooperative learning, learning by doing and assisted laboratory activities. Furthermore, this was a chance to avoid the face to face traditional lesson. If you decide to move the desks, each time you need to, you will probably choose not to move them all the necessary times, for the reasons described above. But, if you have the desks always in the same position you are obliged to use them in that way. This facilitates the implementation of tasks in groups and in a peer-to-peer mode for most of the lesson time and, finally, it did work. To sum up, moving the desks when you need it is not the same and the teacher puts naturally into action the learning strategies that this organization suggests her/him. Weyland (2017; p.154) confirms that "the construction of a school generates a system of relationships in which the triad teacher-student-knowledge transforms into a framework composed of discourses and resonances that lead to the inclusion of space in the definition and organization of the educational relationship".

The last but not the least aspect was that the teachers adopted a rotation seat system in which each month all the students changed the position of their chairs inside the room. This was important in order to enhance the social relationships among the students and to facilitate the sharing of the children's personal skills.

2.2. Beyond content and language integrated learning

It is widely known that "CLIL (Content and Language Integrated Learning) is a dual-focused approach in which an additional language is used for the learning and teaching of both content and language" (Marsh et al., 2011; p.2). It is better to underline that CLIL does not mean to teach a subject using a foreign language as a mere vehicle, but it seeks to teach two subjects in one, and "even where teachers are trained in both a content subject and a language, training in the integration of language and content is not widespread" (Marsh et al., 2011; p.5). Indeed, "in CLIL practice a «dual-focused» approach is understood in many countries as an approach which prioritizes the content subject: CLIL teaching and learning is foremost content subject teaching and learning" (Wolff, 2012; p.108). For this reason, the ability to integrate content and language in a CLIL class is a big challenge. According to Infante et al.

(2009), active approaches, proper strategies and techniques, as well as appropriate material and a varied repertoire of activities play an important role to make a CLIL planning work and teachers have the delicate task of choosing the suitable ones.

Thanks to the CLIL intensive course in Dublin, the teacher had learned how to plan and to put into action a CLIL module, integrating teaching/learning of language, content and skills development, but the most relevant aspect was that she had learned a lot of cooperative learning strategies and techniques whom she started using not only during her CLIL classes. Essentially, she applied a lot of methodological options used more easily in a CLIL environment, such as co-construction of knowledge among peers and with the teacher for cooperative learning (Marsh et al., 2011), task-based learning, project work, learner orientation and autonomy (Wolff, 2012) and some typical strategies or techniques, during both CLIL and non CLIL modules. In the study of Infante et al. (2009; p.162), it is confirmed that "[…] the methodological innovations of a CLIL class, the creation of a new context and new practices [...] helped teachers to become more flexible and to partially change their methodology and way of organizing their non-CLIL".

The teacher especially employed the Think/Pair/Share strategy as a tool for carrying out teaching-learning sequences during each regular Mathematics or Science class. The TPS is an active teamwork learning strategy developed by Professor Frank Lyman and his colleagues at the University of Maryland in 1981 (Kaddoura, 2013). It consists in the three following steps: *think* alone to a solution or answer, compare in *pairs*, *share* in two pairs and then with the rest of the class. "The idea behind this strategy is that presenting aloud the problem-solving process helps analytical reasoning skills" (Kaddoura, 2013; p.7).

Another example of a significant technique adopted was the so called 3-2-1, where the numbers stands respectively for these tasks: write 3 things you have learned, write 2 interesting things, write 1 question you still have. This is a task that can be used both as a feedback and a reflection on one's work and it enhances the learning, defining where the students are, where they are going to and what they have to do to get there. It promotes meta-cognition and self-assessment.

However, the strategies and techniques used were so many, that it is not possible to present all of them in this briefly presentation.

2.3. Flipped classroom

The Flipped Classroom, such as the CLIL, is a constructivist and cognitive approach where active learning and group dynamics are promoted. It is a pedagogical method in which the traditional learning environment is reversed: the lecture-style lesson is moved at home, outside the classroom, with the new technologies' support, while the individual study and homework are implemented at school with the presence of a teacher. The teacher before the lesson provides his/her students with some online videos, multimedia sources, books or e-books; the students study at home watching the videos, consulting the materials over and over again, according to their own needs and before coming to school for the class. The teacher can plan the class activities taking advantage of innovative pedagogical methods, such as the problem-solving, the spaced learning, the inquiry learning, the blended learning, the web quest, the research action, the collaborative learning, and so on (Maglioni & Biscaro, 2015). At school students work independently or in small groups on an application task that could be a problem-solving, math manipulatives exercises, an experiment, the construction of a mind map, a graph or a chart, a debate with peers, a poster production, an oral presentation, and many others. In this way pupils can practice at school with the support of peers and that of the teacher. Moreover, all this means a more interactive and engaging, student-centered environment, where the active protagonist is the student himself. The role of the teacher changes from the one of the knowledge expert and keeper to the one of the facilitator, who doesn't allow the student to be discouraged (Maglioni & Biscaro, 2015).

In this action research, both teachers implemented this pedagogical framework in History, Geography, Mathematics and Science, when the children were in their 5th grade. The first obstacle encountered was how to share the homework tasks and materials with the students. Almost all the children, with the exception of two, had the possibility to surf on the web with their parents' personal device (a smartphone, or a pc, or a tablet); however, the majority of them had only very basic digital skills. At school they had an inadequate and unsuitable computer room, so they couldn't practice with the technologies. Using an online platform with many functions, such as Edmodo, for sharing materials and having online collaborative discussions, would have been too complex for them, thus the teachers decided to use an engaging online application: the Padlet website (https://it.padlet.com/ for Italian users). It consists merely of an online virtual board where the members can share some post-it with the others that are allowed to join that secure location, through a custom URL created by the teacher. On the post-it, it is possible to add pictures, website links, and phrases. Furthermore, it is free and easy to use. This application was very useful because of its simplicity and of immediate use, but it was also inspiring and

engaging for them. Therefore, when the teachers assigned homework, they gave their pupils a simple Padlet URL, where they could find some links to online videos, to online games on the topic, to a web-based word processor (they used FreePrimaryPad https://primarypad.com/), where they could work together in real time, or other relevant instructions. The PrimaryPad, for instance, was used to compose a shared glossary of new words encountered in the videos; each child could add one or more words to the online file or check and correct the possible mistakes of his/her peers. The result was the creation of a collaborative glossary. For those students who could not use the technologies at home, the teachers prepared some additional materials on paper, such as readings and games.

At school, teachers fostered cooperative learning, through application and communication tasks in small groups with peers. They asked their pupils to produce a mind map with the PrimaryPad glossary words written in post-it, to solve problems with the TPS strategy, to do an experiment, making hypothesis and giving conclusions, to produce a poster that summed up their new knowledge, to develop a guided scheme with the most important information, and many other active tasks. The teachers also took pictures of their products and shared them with their students on the Padlet, in order to let the children ponder on them, before the verbal presentation to the class peers.

3. Assessment and results

This way of running the learning environment had led them to a substantial change in assessment practices too. Next to the traditional assessment system, made of written tests, verbal exams, and individual tasks, which were used less and less, the teachers employed also two other tools: rubrics for assessment and observations through a logbook.

A rubric is an explicit list of criteria chosen for assessing a specific task. There is a graduated scale in a grid with the level of the performance, a score, and a descriptor, which follow each criterion. A rubric was produced for each task to assess; the criteria chosen were the elements of a performance they wanted to measure and they were usually referred to: how the students worked in group, their level of knowledge of the topic, the skills engaged and developed by the task, the ability to present the topic to the class peers, the originality and creativity of the solution found. The final result of the performance is the average value of the different scores obtained. For instance, a group may have the same score on how they carried out their group work, but different scores for each member of the group for the skills developed or the knowledge acquired with the activity. Rubrics were applied, for example, to assess a task in which a small group of students were asked to make a poster on a topic and present it to their classmates.

The second tool used was the participant observation in the field through a logbook. The teachers took notes on what they had seen and listened during the activities, walking around the class, registering all the meaningful episodes that happened during their classes. This was an extended observation that lasted for the full five years. Once or twice a week, they shared the information recorded on their logbook and the scores obtained by the students with the assessment rubric, agreeing on the results gained.

The results with the implementation of the learning environments and experiences described above can be summarized as follows and they are related to both the pedagogical frameworks adopted and the re-organization of the desks in the room. This is due to the fact that both the learning environments of the CLIL and the Flipped Classroom have in common the use of many cooperative learning strategies and the classroom setting has enhanced their application. The objective of this action research was not that of comparing the two approaches but to identify the pros and cons of their use. It is not possible to split the results between the two, because they had been employed in the same long period and their benefits were reaped all together.

Starting from the positive effects, the students have developed, with different levels of proficiency, a lot of new cross-disciplinary skills for a lifelong learning, such as teamwork, collaboration, autonomy, facility in using online workspaces, oral and written communication, public speaking, reasoning, creativity, analysis, synthesis. These skills were recorded through the use of rubrics and also with the support of the observations. Furthermore, with these appraisal methods, pupils did not feel pressure or anxiety for the evaluation of their performances, because the teachers took notes all the time, while they were working together in groups and the final responsibility was always that of the whole group. Secondly, students were more motivated and engaged in the implementation of their tasks and the activities chosen helped to reduce their sedentary lifestyle at school, too. Many times some of them said: "It's already 4:30?!". Thus, they had a more rapid perception of the passing of time. Moreover, the learning pathways were individualized most of the time; at home, thanks to the use of online videos, that could be watched as many times as each one needed; at school, where each student, inside his peer group, contributed to fulfill a task engaging his own personal skills. Finally, an improvement of the skills in the foreign language, due to the CLIL approach only, was recorded in the majority of the students. It is

remarkable that the outcomes of two pupils, who don't like the English language and whose performances had always been under the average, were improved surprisingly thanks to the CLIL approach in Science, their favorite subject.

On the other hand, few disadvantages were found. For instance, a cooperative learning class may be more chaotic and noisy and sometimes it is necessary to teach the children how to modulate their voice. Ultimately, longer periods are needed for teachers to both run the same amount of content of a "traditional" class and plan the activities.

4. Conclusions and opened issues

By way of conclusion, the present work does not have the claim to produce general rules. It was perhaps significant and meaningful only in that type of situation. However, according to Weyland (2017; p.153), "the combination of pedagogy and architecture provides added value to the planning of a school and opens interesting perspectives […]". Thus, it is possible to say that changing the classroom furniture and spaces organization may lead to interesting outputs, such as in this experience.

Moreover, confirmed by Kaddoura (2013), there is a lot of research showing that students working together cooperatively learn better. In fact, in his study with nursing students, he discovered that the TPS is an effective strategy to foster critical thinking. Also, in this study, the TPS and the cooperative learning strategies adopted through both the CLIL and the Flipped Classroom frameworks have proved that important results may be achieved in the acquisition of higher order skills.

Although there are no significant and relevant statistical outputs on the experimentation of the Flipped Classroom in Italian schools yet (Maglioni & Biscaro, 2015), especially for the primary school, and the successful non-Italian results might not be reliable if we refer to the Italian school system (Maglioni & Biscaro, 2015), many positive effects have been recorded through this learning environment. For instance, the benefit of planning easily individualized learning pathways and the changes in the assessment practices pave the way to significant pedagogic opened issues: the possible tools of fostering inclusion and a skill-based learning, the revision of the appraisal practices and the worth of the marking system.

In addition, this research has pointed out a possible solution to the lack of computer facilities at school, showing how to make your students develop digital skills anyway.

The last but not least relevant opened issue concerns the time needed to run the same amount of content of a "traditional" class. To put these learning environments into practice required, in this experience, a longer time for a selected and reasoned choice of contents. These approaches might be at odds with an encyclopedic school system or a crowded curriculum. Some countries, such as Finland, assert that *less is more* (Day, 2015).

References

Day, K. (2015). *11 Ways Finland's Education System Shows Us that "Less is More"*. Retrieved January 22nd, 2018, from: https://fillingmymap.com/2015/04/15/11-ways-finlands-education-system-shows-us-that-less-is-more/

Infante, D., Benvenuto, G., & Lastrucci, E. (2009). The effects of CLIL from the perspective of experienced teachers. In D. Marsh, P. Mehisto, D. Wolff, R. Aliaga, T. Asikainen, M. J. Frigols-Martín, S. Hughes and G. Langé (Eds.), *CLIL Practice: Perspectives from the Field* (156 – 163). Finland: University of Jyväskylä.

Kaddoura, M. (2013). Think Pair Share: A Teaching Learning Strategy to Enhance Students' Critical Thinking. *Educational Research Quarterly, 36 (4),* 3 – 24.

Maglioni, M. & Biscaro, F. (2015). *La classe capovolta.* [The Flipped Classroom]. Trento: Edizioni Centro Studi Erickson S.p.A.

Marsh, D. et al. (2011). *European Framework for C.L.I.L. Teacher Education: a framework for the professional development of CLIL teachers*. Retrieved September 2nd, 2015, from: https://www.ecml.at/tabid/277/PublicationID/62/Default.aspx

Park, E. L., & Choi, B. K. (2014). Transformation of Classroom Spaces: Traditional versus Active Learning Classroom in Colleges. *Higher Education: The International Journal of Higher Education and Educational Planning, 68* (5), 749-771. doi:10.1007/s10734-014-9742-0.

Weyland, B. (2017). Pedagogy and Architecture in Action: the Power of a Common Language. *Ricerche di Pedagogia e Didattica – Journal of Theories and Research in Education, 12* (3), 149 – 168. Retrieved March 17th, 2018, from: https://rpd.unibo.it/article/download/7642/7367

Wolff, D. (2012). The European Framework for CLIL Teacher Education. *Synergies Italie, 8,* 105 – 116. Retrieved March 17th, 2018, from: https://gerflint.fr/Base/Italie8/dieter_wolff.pdf

THE IMPLICATIONS OF ARTS EDUCATION ACTS FOR PROFESSIONAL MUSIC TRAINING PROGRAMS: THE TUT EXPERIENCE

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Abstract

The Arts Education Act (AEA) of 2015 is a sequel to the Special Education Act of 1984 that was designed to apply relevant theories to curriculum standards for education reform in Taiwan. The Acts are founded on the belief that high expectations and setting goals will result in success for gifted and talented students. In 2000, the Ministry of Culture, Taiwan, reauthorized the Law of Arts Education of 1997 as the AEA of 2000. The latter Act directed the Ministry of Education at the level of central government, municipal government at the level of special municipalities, and county (city) government at the level of counties (or county-level cities) to implement the teaching of art theory and techniques at schools, carry out artistic research and creation, and cultivate a diverse group of arts professionals. The reauthorization mandates that funds, knowledge of art, and art-related courses be incorporated following the model of artists-in-residence projects. Researchers in the field of music education policy argue that the focus of music education policy must be on the people dealing with music and their varied musical practices rather than only musical works and their dissemination. The purpose of this case study is to revisit and examine policymaking within the context of professional music training programs by describing and analyzing the history of arts education in Taiwan and the current policymaking framework implemented at the Tainan University of Technology (TUT), Taiwan. The conclusion drawn is that effective policymaking involves democratizing access to works of fine art and strengthening the role of music in society. Education institutions can provide a conceptual framework for understanding the implications of the AEA of 2015 for professional arts education in both the legal macro- and microenvironments.

Keywords: Education policy, arts education act.

1. Introduction

After World War II, leading and engaging in advocacy efforts for arts education in Germany and the USA prospered because successful policies made constructive cooperation among relevant institutions and representatives possible (Jank, 2009; Scheneider, 2009). In the early 1960s, the same tendency became evident for the development of the designated administrative authorities for arts education in Taiwan, which implemented a project for cultivating talent competence that is unique in the world (Ministry of Education, Taiwan, 2017).

Taiwan's special education has a long history. The Foundation Stage for Taiwan's special education dates back to 1889, when a school for the visually impaired opened in Tainan. The visually impaired were taught to read the Bible in Braille and make crafts. The school later incorporated speech impaired students. The establishment of schools for the hearing and visually impaired ushered in a new era of special education and paved the way for future developments.

The Experimentation Stage (1962-1983) included the development of policies and guidelines that played an important role in the development of education for gifted students in Taiwan. Over time, these programs have gone through three stages. This stage involved three shifts in focus. The first focus of experimentation was designed to provide special education for gifted elementary students. Motivated by the suggestions of the National Education Convention in 1962, administrators of two elementary schools in Taipei started an enrichment curriculum for gifted students in 1963 (Tsai & Shih, 1997). In 1971, an elementary school in Taichung City started a special class for gifted students. These students were enriched in mathematics, science, and Chinese (Shu, 1978). In order to explore the characteristics of gifted students and develop appropriate, effective forms of education, the Ministry of Education began experimental programs for gifted students in 1973. Based on the second focus (1979-1984), programming

was designed to extend special education to gifted students at the junior high school level. The programs also included talented students in music, art, and dance. The third focus of programming occurred between 1982 and 1989. In addition to the services that were included in the second focus, this focus included opportunities to accelerate through the grade-level sequence by skipping school years (Ministry of Education, 1982). According to third focus programming guidelines and related statutes, the school years for each level, including elementary, junior, and senior high schools and colleges, can be shortened up to one year: Gifted students can complete a college education and earn a bachelor's degree by the age of eighteen. Without acceleration, they would be twenty-two years old (Tsai & Shih, 1997).

In 1984, the Special Education Act was enacted, establishing standards that regulate the promotion of special education to safeguard students' rights and interests. In the Legislation Stage (1984-1996), efforts in special education focused on diagnosis and evaluation of special students, placement of students in the communities in which they were based, and promotion of research so that both disabled and gifted students would have access to education suitable for them.

In the Development Stage (1997-2007), pursuant to the White Paper, the Special Education Act was amended in 1997, increasing the categories of disabled students to twelve, while those of gifted students increased to six. In 1997, a new milestone, the Art Education Act (AEA) was enacted, which provided a solid foundation for music education in Taiwan for all students (Ministry of Education, Taiwan, 1997). The AEA of 1997 was related directly to Taiwan's art education reform (Lau & Li, 2013). The AEA (1997) stated as follows:

The purpose of art education is to cultivate artistic talent, enrich the spiritual life of the citizens, and to raise the level of culture... Arts education is implemented in the following three ways: Professional arts education offered at schools; general arts education offered at schools; arts education offered to the public. (p. 147)

The AEA announced by the Ministry of Education in 1997 states that performing arts are part of arts education. The aim of the AEA is to promote the cultivation of artistic talent, enhance the public's understanding the arts, strengthen the public's sense of aesthetics and creativity, enrich the public's spiritual life, and raise the overall level of culture. A final shift is heralded with the Ministry of Education's (2016) *5-Year Plan for the Development of Special Education (2016-2020)* and an "Action Plan for the Whitepaper on the Education of Gifted Students" (2008), with the Special Education Act amended to provide quality educational opportunities, create fine educational environments, and meet students' individual needs (Ministry of Education, Taiwan, 2016). In November 2015, legislator Pi-Han Chen pointed out that arts curriculum often have been replaced with major subjects and examinations in Math and English in schools (United News, 2015). The question raised is how can schools set up talent classes for students and practice ability-groupings? To open up art education to new audiences requires new approaches in arts education. It is important that applicable evaluation and mechanisms of rewards and punishments be established to eliminate inadequate education and ascertain with clarity what arts and aesthetic sensibilities are.

The AEA of 2015 is reshaping arts education in Taiwan. The aim of the AEA is to improve the public's understanding of the arts and enhance their sense of aesthetics. According to the art education law, art education falls into one of the following categories: Education at a professional art institution, art education at a regular school, and social art education (Ministry of Education, Taiwan, 2018). In this paper, a professional art institution's arts education policy issues are approached by first considering the political context for the AEA, then discussing some core views that are implicit in the arts education program in Taiwan, and finally, reflecting on the possible implications and challenges these contexts constitute for professional music training programs.

2. Background

A stated goal of the Policy of Art Education (2005) for the population in Taiwan is to experience the inspiration of aesthetic perception and creativity for as long as they are living. One of the seven learning areas in *1-12 National Basic Education Curriculum Guidelines* (2014) in Taiwan is the Arts and Humanities curriculum, which comprises the visual arts, music, and performing arts. Although the area is allotted relatively few contact hours (3 hours) in school (except for professional music training programs), it is still a compulsory subject during the first 12 years of schooling. The music curriculum focuses on three main areas: Performing music (including singing, dancing, and playing instruments), listening to music (including music history and verbalization), and composing music (including improvisation); it covers a wide range of musical genres and activities. The Seven-Year Coherent College of the Tainan University of Technology's (TUT) music department was established in 1998. A coherent sequence requires that at least 184 credits are completed in the first five-year program of study (junior-high school

or junior college level), and at least 96 credits are completed in the final two years of an advanced level of study (junior and senior undergraduate level) in music training.

The AEA of 2015 is a sequel to the Special Education Act of 1984 that was designed to enact theories relevant to curriculum standards in education reform in Taiwan. Christophersen (2015) noted that scholars in music education such as Gande and Kruse-Weber (2017), Bozalek and Biersteke (2010), and Levin (2010) have called for increased attention to policy studies. Policies can be useful tools for effecting change (Morse & Struyk 2006), but policy analysis, which shapes and informs policy recommendations, has not yet been widely employed by music education scholars who have called for widespread changes to curricular content or pedagogical approaches to understand policy implications for various aspects in arts education theory. Researchers have considered how policies related to the governance of school systems and the learning environments in schools are associated with performance in arts education and equity at the country and school levels (Tsai & Shih, 1997). This case study draws upon such research to describe the Taiwanese political context for the AEA policy.

3. The meaningful music education context for the policymaking

Policymaking is not entirely a bureaucratic add-on. Shivelys (2015) asserted as follows:

Constructivism, as both an epistemological view (Duffy and Jonassen 1992) and a theory of learning (Fosnot 2005), provides us with fertile ideas for considering learning and teaching in music classrooms and other music learning settings. It is about how we make meaning of our experiences and come to know the world. (p. 129)

Drawing attention to the importance of integrating learning through an Arts Special Education program is not new. Eisner (1985) claimed John Dewey (1859-1952) mentioned how curriculum should be "interconnected and interdependent" (Kieffer, 1996, p. 14). It makes sense to use Shively's (2015) constructivist view of learning and teaching as a conceptual framework for finding a balance between progressive and traditional views of music education in order to evaluate the curriculum integration process of the Arts Special Education program in Taiwan. It is anticipated that such a conceptual framework will, if selected and expertly applied, make an important contribution to curriculum integration research for Arts Special Education as well as to the broader field of teaching methods, be a pragmatic approach, and provide a means for accessing feedback about the evaluation of the Arts Special Education program.

4. Implications of the arts education acts

Knowledge of arts education acts has implications for policy and professional arts education. It is important to realize that teachers are not the only ones who should be familiar with the arts education acts As Jank (2009) points out, the school administration, principal, and other stakeholders need to possess an awareness of their potential involvement in policies because successful policy makes constructive cooperation among relevant institutions and representatives possible. Moreover, Cole (1990) found the two conceptions of academic achievement inadequate in helping educators to think about learning, concluding that educators need to formulate an alternative conception that integrates divergent views of achievement, carries clear instructional implications, and focuses on long-term educational goals (Cunningham
& Cordeiro, 2003). Individual teachers in the arts education faculty might provide insight into and develop effective and meaningful professional arts education policy. Extending this view to professional music training programs, teaching and learning music should be structured in a way that both encourages personal, hands-on experience and contextualizes that experience in relation to historical, cultural, and social dimensions. The TUT experience enables learners to construct and act on their own understandings.

One of the most immediate and powerful implications of AEA (2015) is the realization that education requires that universities, colleges, junior colleges, and senior high schools for arts education implement a single-track educational system after receiving approval from the designated administrative authority for arts education (AEA Article 7, 2015). The training program is not about ensuring that students fulfill statutory requirements or have musical works and support in various contexts; rather, the emphasis is on the necessary music education policy as well as encouraging and developing music teachers' abilities to participate in music education policymaking.

5. Conclusion

Art education curriculum is a continually evolving process that in Taiwan has been subject to socio-historical forces, the attempt to accommodate students with disabilities, gifted students, and the public at large, and the needs of the stakeholders involved. The programs included talented students in music, art, and dance. Arts education policy has changed over the years in Taiwan to re-envision music education with the intention to promote engaged learning as perceived within constructivist ways of knowing. The TUT has endeavored to accommodate that policy by adopting a constructivist approach that includes the various stakeholders. TUT has used constructivism as a lens for examining art education practices. This examination leads to continual refinement of teaching practice—a teaching practice in which learning and teaching have a symbiotic relationship (Shively, 2015).

It is important to recognize that professional music training programs require a cooperative approach. There is a need for policymakers and administrators to adjust their values, aims, content, strategies, and methods to various contexts and the societal functions of music and music education. As Jank (2009) suggests, it is necessary to design a set of activities that will enable successful cooperation for hard policies (such as decisions concerning cultural and education policies) and soft policies (such as university admissions criteria and curricula). This recognition may be facilitated with knowledge on the part of policymakers, teachers, and administrators of arts education about the policy implications for professional music training programs.

While most of the interest groups have agreed with McCool (1995) that theories guiding policy should be practical and "directly relevant to applied policy problems" (p. 396, as cited in Cooper, Fusarelli, & Randall, 2004, p. 8), it is clear that not all Arts Special Education learners are in programs with the same outputs. Part of educators' responsibilities is to ensure "a system that models good assessment practice as it audits local fitness" (Cunningham & Cordeiro, 2003, p. 227) and encourage a more constructivist learning environment with the development and implementation of policies.

References

1-12 National Basic Education Curriculum Guidelines. (2014, November 28). Retrieved from https://www.naer.edu.tw/files/15-1000-7944,c639-1.php?Lang=zh-tw

Action plan for the whitepaper on the education of gifted students (2008). Retrieved from http://english.moe.gov.tw/ct.asp?xItem=11631&ctNode=508&mp=11

Ansalone, G. (2004). Achieving equity and excellence in education: Implications for educational policy. Review of Business, 25(2), 37.

Arts Education Act (1997, March 12). Retrieved from http://english.moe.gov.tw/ct.asp?xItem=14676&ctNode=11435&mp=1

Arts Education Act (2000, January 19). Retrieved from https://books.google.com.tw/books?isbn=1681232111 -

Arts Education Act (2015, December 30). Retrieved from http://edu.law.moe.gov.tw/EngLawQuery.aspx

Bozalek, V., & Biersteke, L. (2010). Exploring power and privilege using participatory learning and action techniques. Social Work Education, 29(5), p. 551-572. doi:10.1080/02615470903193785

Browning, K. (1994). Performance art education. Unpublished doctoral dissertation, University of Toronto, Canada.

Cavendish, R. (2008). The treaties of Tianjin. History Today, 58(6). Retrieved from http://www.historytoday.com/richard-cavendish/treaties-tianjin

Cheng, Y. X. (Ed). (1998). Centenary Taiwan music picture pilgrimage. Taipei, Taiwan: Times Publishing.

Cheung, H. (2017, April 14). Taiwan in time: How the Qing lost Taiwan. Taipei Times. Retrieved January 12, 2018, from http://www.taipeitimes.com/News/feat/archives/2017/04/16/2003668809

Christophersen, C. (2015). Changes and challenges in music education: Reflections on a Norwegian arts-in-education programme. Music Education Research, 17(4), 365-380. doi:10.1080/14613808.2014.930119

Cole, D. (1990). Relation of social and academic competence to depression symptoms in childhood. Abnormal Psychology, 99(4), 422-429. doi:10.1037/0021-843X.99.4.422

Cooper, B. S., Fusarelli, L. D., & Randall, E. V. (2004). Better policies, better schools. Boston, MA: Pearson Education.

Cunningham, W. G., & Cordeiro, P. A. (2003). Educational leadership: A problem-based approach. Boston, MA: Pearson Education.

Eisner, E. W. (1985). The art of educational evaluation: A personal view. London: Falmer Press.

Frydenberg, E., & O'Mullane, A. (2000, January). Nurturing talent in the Australian context: A reflective approach. Roeper Review, 22(2), 78-86. doi:10.1080/02783190009554006

Gande, A., & Kruse-Weber, S. (2017). Addressing new challenges for a community music project in the context of higher music education: A conceptual framework. London Review of Education, 15(3), 372-387. doi:10.18546/LRE.15.3.04

Jank, W. (2009). Moving in a field of conflicting forces: Problems of music education policy in Germany. Arts Education Policy Review, 10(4), 14-21. doi:10.3200/AEPR.110.4.14-21

Kieffer, C. W. (1996). High school seniors: Constructing meaning in an arts-integrated, thematic, and collaborative learning milieu. Doctoral dissertation, National Louis University, Evanston, Illinois.

Ku, Y. C. (2012). The choral music of Taiwan. Retrieved from http://icb.ifcm.net/en_US/choral-music-taiwan/

Lau,H. F., & Li, C. (2013). Curriculum innovations in changing societies: Chinese perspectives from Hong Kong, Taiwan and Mainland China. Retrieved from https://www.sensepublishers.com/media/1767-curriculum-innovations-in-changing-societies.pdf

Levin, K. R. (2010). Federal policy developments in arts education: Opportunities at the local level. Retrieved from http://www.omea-ohio.org/Static_PDF/Advocacy/SpecialFocus/FederalPolicyDevelopments.pdf

Ministry of Education (1982). The stage three experimental programming for gifted children. Taipei: Author (in Chinese).

Ministry of Education, Taiwan (1997). Art education. Retrieved from http://english.moe.gov.tw/ct.asp?xItem=14676&ctNode=11435&mp=1

Ministry of Education, Taiwan. (2005, December). Arts education policy white paper. Taipei, Taiwan: Author.

Ministry of Education, Taiwan (2016). 5-Year plan for the development of special education. Retrieved from 163.26.66.14/www/uploads/tadnews/file/nsn_4746_2.doc

Ministry of Education, Taiwan (2017). 12-year basic education, special education for the disabled and the gifted curriculum guideline. Internet symposium. Retrieved from http://sencir.spc.ntnu.edu.tw/_other/GoWeb/include/index.php?Page=6-A

Ministry of Education, Taiwan (2018). Art education. Retrieved from http://english.moe.gov.tw/ct.asp?xItem=14676&ctNode=11435&mp=1

Morse, K., & Struyk, R. J. (2006). Policy analysis for effective development: Strengthening transition economies. Boulder, CO: Lynne Rienner.

Policy of art education (2005). Art education. Retrieved from http://english.moe.gov.tw/ct.asp?xItem=14676&ctNode=11435&mp=1

Scheneider, J. (2009). Privilege, equity, and the advanced placement program: Tug of war. Journal of Curriculum Studies, 41(6), 813-831. doi:10.1080/00220270802713613

Shively, J. (2015). Constructivism in music education. Arts Education Policy Review, 116, 128-136. doi:10.1080/10632913.2015.1011815

Shu, S. T. (1978). Education for gifted children. Taipei: Kaiming Book Store (in Chinese).

Special Education Act (1984). Introduction of Special Education. Retrieved from http://english.moe.gov.tw/ct.asp?xItem=11631&ctNode=508&mp=11

Tsai, D. M., & Shih, Y. S. (1997). Gifted education in Taiwan: Services, problems and challenges. (Doctoral dissertation）Kao-Hsiung Normal University, Kao-Hsiung.

United News. (2015, November 27). The reauthorization of arts education act. Retrieved December 30, 2017, from https://udn.com/news/story/6885/1340544

EDUCATION REFORM IN TRINIDAD AND TOBAGO THROUGH THE LENS OF COMPLEXITY THEORY

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Abstract

The education system in Trinidad & Tobago, since independence from Britain in 1962, has been subject to on-going reforms, and while there has been some improvement, in the secondary sector thousands leave school every year with minimal or no qualifications. Threats to equity and social justice continue because, the failures occur primarily in the state-led sector, which houses the majority of students, many of whom are of African or Indian ethnicity and of lower socio-economic status. The 'prestige' sector is much smaller, high-achieving, and mostly traditional denominational, grammar schools which houses, in addition to high-achieving African and Indian students, those of the wealthy White, Syrian-Lebanese and Chinese minority communities.

Historically, there has been a concerted effort to maintain this dual system in secondary education. While that continues to be contentious, reforms directed mainly at the state-run sector, have not resulted in any palpable improvement. Teachers and other educators repeatedly question the central role played by politicians in the "roll out" of any reform. This paper is based on data collected from 13 teacher educators who assist teachers on a daily basis in improving their teaching and implementing reforms. They were specifically asked about their experiences and perceptions about education reforms as enacted and their reflections on the possible reasons for the continued massive failure in the secondary system. These responses were subject to qualitative data analysis.

The paper attempts to show that a paradigm shift is long overdue; one that takes on board the experiences of all stakeholders in a meaningful manner; and, one which sees education as 'a sprawling ecosystem' rather than a tight unit amenable to top-down or bottom-up approaches. The idea of a complex system with positive and negative feedback loops, emergence, a turbulent and changing external environment, as well as, the salience of micro-level knowledge, speaks to how the system is really constituted. Such realities have been ignored in attempts at reform, and perhaps may not be able to be sustained because crucial elements: constant dialogue across different stakeholder groups, paying close attention to the experiences of various groups, collaborative relations, regarding teachers as the true gatekeepers of the reform – seem to be inimical to the goals and purposes of those in control. The paper ends with some ideas on how a traditionally oriented, politically-driven education system could learn from reform approaches based on complexity theory.

Keywords: Trinidad & Tobago, educational reform, complexity theory, equity, secondary education.

1. Introduction

Great efforts and much expense have been directed at reforming the education system in Trinidad and Tobago, some of them piecemeal and dating from the colonial period, but since independence in 1962 there has been on-going, system-wide implementation of reform (Campbell, 1997). This paper will focus on the secondary system, which in the past was small and exclusive and only open to the affluent and those among the poor who won the few scholarships available. From independence onwards nationalist governments sought to increase equity in the system by building more schools and Universal Secondary Education (USE) was finally achieved in 2001. Reforms also focused on improving the quality of education, making for a more inclusive system. After sixty years of continuous reforms, there are some small improvements but the big items such as equity, social justice and better academic performance across all types of secondary schools remain seemingly untouched (Joseph, 2010). It is the contention of this paper that the population continues to maintain support for an ideology of education that is exemplified in the small, prestige sector of long-established, mainly denominational grammar schools, based on the British model, even as they attend, or teach in, the state-controlled alternative or new sector which responds to a more egalitarian philosophy of education and caters to diverse student

needs and offers a varied curriculum. Reforms have not been able to dislodge, in the public at large, traditional ideologies associated with a 'good education' or a 'good school' or an academic curriculum orientation or even, the best ways of assessing students. The state gives mixed signals – actively supporting the elite sector and rolling out reforms for the new sector, yet interrogation of these on-going and expensive reforms reveal no real commitment to seeing them through to fruition.

The education system is characterized by contradiction, conflict, rhetoric and ideologies stemming from its genesis under a class-based system where an abstract, classical curriculum was necessary to be considered an educated and cultured person. Enter a new nationalist government in 1962 attempting to decolonize the system and make it more 'relevant' (even as many members were themselves outstanding students of the colonial education experience). Obfuscating the issues, are the denominational bodies, chief of them being the Roman Catholic lobby and Hindu organizations, which adopt an adversarial stance to the state's bid to exert more control of denominational schools (Stewart, 1981), and this has much support from the public, and even the present Minister of Education (Harrinanan, 2016). While the state has increasingly brought denominational grammar schools more into a centralized system, the reforms rolled out for system-wide implementation are often ignored in such schools. There is no press to urge them to conform because to a large extent, the public and the members of the government uphold traditional ideologies about education, and these schools are consistently top performers at high-stakes examinations. At the same time, the state is responding to calls for equity and social justice and ratifying international agreements such as the Millennial Development Goals (MGDs) and Education For All (EFA), which in the local context, translate into a mandate for improvement in the new state schools which house the greater numbers of students and are characterized by academic underperformance, indiscipline, violence, teacher absenteeism and apathy and student disengagement generally (Lochan, 2014).

It seems evident that Trinidad and Tobago should consider a different paradigm when undertaking reform. The various groups and constituencies which are seemingly pitted against each other actually hold similar core values about education. Yet, the state has a responsibility towards all its citizens and is influenced to adopt best practices internationally which make public its commitment to social justice, equity and EFA. There is danger here of rhetoric covering over a deep sub-stratum of core ideologies about education. Contradiction is inherent in what is said and what is done and to a large extent reforms, begun with much fanfare nearly always fizzle out (Joseph, 2010). Any future attempt at reform must have the scope to unearth the tensions involved in having ideologies, beliefs and practices which hold a traditional, elitist education dear, while at the same time responding to pressures to uphold a more modern outlook that emphasizes egalitarian and inclusive approaches. Reforming the education system then is necessarily a multifaceted task involving prior and continuing penetration of the mindsets of various groups. If the understanding of this process leans more towards a 'labyrinth' to be explored which is 'byzantine' in its permutations, rather than a routine rollout of stakeholder meetings to determine inputs into the reform being considered, then more focus would fall on a wide variety of groups in their natural settings and be more likely to yield valuable contextual information to customize the reform, and keep on re-working it.

1.1. Complexity theory

Complexity theory (Alhadeff-Jones, 2008, Snyder, 2013) posits that there comes a time in the evolution of a system when the centre can no longer viably hold things together as it does not possess all the information that various groups at all levels are generating. Similarly, a decentralized model would find difficulty in getting important information to and from centre. One gets the picture that a system becomes 'complex', and therefore not amenable to efficient linear flows of information, either top-down or bottom-up, when the variety of groups who comprise the system, some only indirectly related, possess valuable information and expertise that can aid or hinder reform. To date, planners and policymakers have created reforms with information gathered from key stakeholders such as teachers, parents, the public, and sometimes students, treated as inputs into developing the reform. Usually the reforms are expected to be tightly articulated with goals, objectives, diagnosed needs and resources and focus on output rather than the process.

Complexity theory, however, calls attention to the importance of cross-sector systems within the institutional environment that influence, and are influenced by, education. Other ministries, such as those governing health, youth, finance, family and community development, and gender affairs should necessarily be involved as close partners, not only at the beginning but throughout the life of the project, as 'emergent behaviours' and relationships occur around the reform that need to be interrogated, and feedback may require rethinking and retooling, possibly using methods characteristic of other disciplines. The analogy of education as a 'sprawling ecosystem' comes through clearly here, whereas in other

approaches to reform the analogy of the funnel comes to mind, wide consultation at first and then a narrowing of focus and drilling down at the various sites.

Other groups directly related to education have information that may be important, namely teacher educators, subject associations, librarians, teacher unions, district school supervisors, principals, school security and maintenance staff, school social workers, parent-teacher organizations, the Caribbean Examinations Council (CXC), and NGOs focusing on adult literacy, leadership and character building, volunteerism, cultural activities, amongst many others. Yet they may be only occasionally tapped. Constant dialogue across all groups, deemed necessary to a particular project, is essential because complexity theory recognizes that implementing a reform is really a journey into the unknown. Present models treat reality as knowable and can be planned for and solutions prescribed, but in complex situations not only is the future unpredictable but the reform does not fare the same way in the multitudes of contexts that exist, for example in the different types of secondary schools in Trinidad and Tobago.

Key attributes needed may not be technical skills, but the competencies to collaborate effectively with different groups and constituencies and to sustain that interaction through constant iterative processes and feedback loops where discussions are open-ended and integrative rather than chase after one solution. Kuhn (2008) summarizes how different this approach to reform really is - *"A complexity approach acknowledges that all levels of focus, whether this is the individual, class, school, national or international associations, reveal humans and human endeavour as complex, and that focusing on one level will not reduce the multi-dimensionality, non-linearity, interconnectedness, or unpredictability encountered"* (183).

2. Research design

The problem being investigated is the noted inadequacies of education reform efforts to date and a consideration of the possibility of complexity theory to guide reform in the future. It is a qualitative study which explores the perspectives of 13 teacher educators from a School of Education in Trinidad and Tobago, selected because they work with teachers on a daily basis at schools across the country and have a first-hand appreciation of how reforms are faring while being privy to the actions and views of principals, teachers, parents and supervisory and curriculum staff from the Ministry of Education. They are all experienced teacher educators, most with a background as subject-specialists in secondary schools, and others as supervisors or key administrative officers in the Ministry of Education.

The researcher solicited their views via e-mail (sent out individually) on the failure of educational reform (without mentioning complexity theory). I had initially asked 20 persons but only 13 responded. The wording of the actual e-mail was as follows - *I am envisaging writing a paper and I would like a little input from you. I am thinking about all the education reform that we have implemented and all the far-reaching changes in education in recent times, yet educational achievement/performance for the majority of students has not improved, judging solely by CXC results as a marker. I am asking you to write me a few paragraphs (or longer, in fact I would prefer if you could elaborate) as to why you think that this continues to be so. There may be many reasons but perhaps one or two that you believe are the most important and why.*

2.1. Research questions
o   What do teacher educators feel are the most significant issues that prevent meaningful reform of the education system in T&T?
o   What explanatory power does complexity theory hold for clarifying these issues and suggesting different directions for educational reform?

2.2. Data analysis
Responses were subject to qualitative data analysis i.e. reducing the data via codes and organizing according to significant emerging themes. The analysis was guided by what the teacher educators emphasized in their critique of educational reforms, and whether their statements revealed a 'gap' that could be meaningfully filled by an alternative approach grounded in the tenets of complexity theory.

3. Findings and discussion

There were two major points of emphasis. (1) The issue of time: the urgency with which reforms were implemented, and the slap-dash nature of the implementation process, indicated the influence of political expediency. In Trinidad and Tobago a political party has a five-year term in power and then has to face the polls. There are two major political parties, largely defined by ethnicity, and the campaign trail

as well as interactions in Parliament can become overheated with bitterness and accusations. It is a Westminster form of government, often described as 'the winner takes all' meaning that the winning party has the right to people state boards and other statutory bodies and extend their influence. The losing party only retains the seats they won in the elections. Consequently, there is a 'dog eat dog' fight during each general elections, and this continues in Parliament with the Opposition frequently denying support to bills proposed by the government. Relationships are so polarised that a new party in power often seeks to discredit, discontinue and dismantle the previous regime's efforts at reforms – for example, *The Single Sex School Programme, where some former Junior Secondary and Senior Comprehensive Schools were converted to either all boys or all girls schools. ...lasted for about three years and was overturned by the succeeding government. I am unaware of any positive impact of this reform effort on student achievement* (#3)

(2) There is a lack of comprehensive knowledge and understanding about the contexts that are the target for reform on the part of the policymakers and planners. This relates to the first point in that in the extreme urgency to conceptualise a reform, seek funding, and design, implement and evaluate it, there is little 'space' left for researching schools and iteratively gathering information from all major stakeholders.

- *education reform is often state-centric and top-down, a technical-rational approach is taken without the necessary meaningful consultation with major stakeholders. As a result, there is little buy-in and the reform is doomed even before it starts. Consultations that occur are usually ritualistic and if stakeholders are aware that their voice really does not matter; that their contribution does not significantly changes decisions already made, then support is also withheld.*(#4)
- *There are a number of challenges that persons at the ground level of the education system experience (teachers in the classroom, administrators, parents, counsellors and school support services, entrepreneurs, denominational boards) but these do not seem to be considered when the managers of the system diagnose the needs of the system and suggest reforms.* (#5)

These issues are also related to the specific problem of literacy. The language arts teacher educator stated that many students leave the new or alternative sector with minimal literacy skills, and this has been continuing for decades despite reforms. What is needed is not a specific focus on the discipline per se but, recognition of the nature and characteristics of the clientele when designing reforms. For example,

- *... reform has **never** addressed the issue of text complexity. It's not recognized as an issue in any reform documents, yet it is expected that students will be prepared for examinations on complex texts, that often exceed their ability to negotiate them based on the reasons I just discussed.*
- *An even larger issue, ... stems from inadequate proficiency in Trinidad and Tobago Standard English. There is nothing new I can say about this phenomenon. Annually, it accounts for thousands of creole speaking students' failure to achieve Grade 1 or 2 at English. What is frustrating is that we know children who read voluminously eventually internalize the structure of English, even if they are immersed in creole-speaking contexts, but too many of our adolescents make other recreational choices except reading.* (#9)

There are a number of other issues raised, many at a micro level, but also those which speak to the taken-for-granted practices which encourage inequities. They all relate in some way to the larger issues of political expediency, and ignorance of pertinent and crucial relationships in schools. For example,

- *Teachers work in isolation. Many teachers do not collaborate, share ideas or share best practices. They teach alone, work alone and do not seek help or guidance... Conversations about teaching and learning are often negative. Teachers are very often in survival mode and as a result do not believe that they have time for anything beyond delivering their lessons in the way they best know how to do.* (#11)
- *To me, the biggest reform we need is in the examination system, because it is encouraging superficial teaching. Remember that the failures we are speaking about here are not the children of the educated middle and upper classes, it is the children who often have few supports beyond what they receive from school.* (#9)
- *In a country of hills and valleys, rivers and swamps, villages and cities, I have come to reflect on the contrasts within the education system of my beloved country. We love geographical contrasts in small areas, but do we love disparities within education? Do we love that certain schools are considered elitist? Do we love that students access secondary schooling based on performance at eleven plus? That some schools will have only the top performers and others only those who can barely read and write, thousands of them?*(#13)
- *To arrive at the establishment of a positive school culture requires considerable effort, vision and dedication and also support from the Ministry of Education. It requires consistent cooperation from parents and guardians as partners in the schooling enterprise. Where this home-school partnership is lacking it is more difficult to maintain a culture of excellence at school.* (#7).

Viewing these comments through the lens of complexity theory reveals some glaring misconceptions about what it means to set about to improve a system. The theory is not difficult to grasp, it speaks to the kind of competencies needed by those who are keenly observant and willing to listen to others. And, to be able to do that iteratively, so that emergent behaviours are properly interrogated and factored in to the reform, which may take a different direction than originally envisioned. This calls for flexibility on the part of those leading the reform and an attitude of humility in trusting the knowledge and understanding coming from those working in schools, from parents, as well as from communities.

The focus of complexity theory is on collaboration of all possible groups or interested parties, fostering partnerships between them and, developing collegial relationships, all trained towards system improvement. In the present scenario this is eclipsed by the overarching constraint that all decisions must have political sanction. This allows for political interference at even micro levels, long delays in approving measures and, upholding the status quo even in instances where glaring inequities exist. If politics is at the centre of any reform effort, then the kinds of practices and competencies being called for by complexity theory will be difficult to take root. There is suspicion between different groups, for example the issue of denominational privilege, raises heated debates reaching far back into the 19th century. The kind of soul-searching and reflection needed by different groups on, for example, the reasons why reforms in the state sector are not evaluated and monitored although this is the sector with the greatest need, must tap into existing ideologies about education and whether these reforms will actually help students in new sector schools. But, this is a non-starter because groups do not meet with this kind of disclosure in mind; they meet to discuss 'implementation' issues and rarely feel that in a society divided by politics, race and class, to introduce a conversation about the larger issues (high-stakes examinations, entrenched inequities, failure of past reforms) is a good idea.

4. Conclusion

Complexity theory is an approach that sets about to derive the most relevant information possible about the system so that the reform effort could be meaningfully informed. To do that frank and respectful dialogue must occur and that could be achieved, over time, as disparate groups routinely interact with each other, brought together by a common mission. Research through such a means can reveal nodes (groups) and norms (interactions) which represent valuable information in thinking out how a reform will be accepted and its likely trajectory. Long before specific reforms are actually contemplated then, research into the system should be put in place. In the present climate of adversarial relations between some of the major players in education, expanding research into the system, which is necessary for any organization (beginning with quantitative data), could be a way to develop solid knowledge of all parts of the system, prior to any reform undertaking. Hopefully, such data would lead naturally to more qualitative approaches, as issues arise, that may unearth the knowledge and insights from groups nearer to the chalkface. It may be that the tenets of complexity theory cannot be fully implemented in local reform efforts right now, but its cardinal point that more contextual information is fundamental to successful reform can be a starting place, and more research into the system could bring us closer to confronting the issues that have in the past led to educational failure.

References

Alhadeff-Jones, M. (2008). Three generations of complexity theories: Nuances and ambiguities. *Educational Philosophy and Theory, 40*(1), 66-82.

Campbell, C. (1997). *Endless education: Main currents in the education system of modern Trinidad and Tobago, 1939-1986.* Kingston, Jamaica: UWI Press.

Harrinanan, S. (2016, December 16). Garcia: Denominational boards have important role. *Trinidad & Tobago Newsday*, Retrieved January 4th 2018 from http://archives.newsday.co.tt/2016/12/16/garcia-denominational-boards-have-important-role/

Joseph, S. (2010). Lessons learnt from six years of education reform *The Caribbean Journal of Teacher Education and Pedagogy 1,* 19-36.

Kuhn, L. (2008). Complexity and educational research: A critical reflection. *Educational Philosophy and Theory, 40*(1), 177-189.

Lochan, S. (2014). Recent developments in Trinidad & Tobago (2000-2010): Early childhood care, primary and secondary education. In E. Thomas (Ed.), *Education in the Commonwealth Caribbean and the Netherland Antilles* (380-397). London: Bloomsbury Publishing.

Snyder, S. (2013). The simple, the complicated, and the complex: Educational reform through the lens of complexity theory. *OECD Education Working Papers, No. 96*, OECD Publishing, Paris. http://dx.doi.org/10.1787/5k3txnpt1l nr-en

Stewart, S. (1981). Nationalist education reforms and religious schools in Trinidad. *Comparative Education Review 25*(2), 183-201.

INSTRUCTIONAL MANAGEMENT IN TEACHER TRAINING INSTITUTIONS, LAO PDR

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Abstract

This study aims to investigate the instructional management problem, problem comparison, and gathering of opinions of teaching staff toward the problem-solving of instructional management within three Faculties of educations. There were 196 teaching staff as the sampled from three Faculties of Education within three Public Universities in Laos that used purposive sampling Gar & Airasian, (2005) for Target Universities and Faculty of Education and used the tabulation technique for sample size Krejcie & Morgan (1970). The self-constructed questionnaire was 38 items in total under the four subscales (five-point Likert scales) with a drastic vetting twice of its validity and reliability by the ad-hoc therapist. The data collection took place between June-July, 2016 in Laos by paper-pencil as well as data analyzed through SPSS program to see the frequency, percentage, arithmetic means, standard deviation, t-test; f-test, and Scheffe technique. The study showed that instructional management problem under the four subscales was found at the moderate level both overall mean score and subscale individually. Pertaining to the problem comparison of instructional management by gender and teaching experiences found both were not statistically significant differentiation opinions among teaching staff at .o5 and teaching staff's opinions toward problem of instructional management, the majority of the respondents suggested that educational leaders within three faculties should be provided an equity and equality of learning the opportunity to teaching staff in attending the specific training purposes and skill needs urgently that concerned to the four sub-scales studied mainly. Besides, teaching staff themselves should be minimized negative behaviors, reduces a single theory tracking form and in turn, they should increase and promoting of peer-review, learners-centered, role-play, field trip, activity, and examples related, group focused, learning tasks, and self-producing the instructional tools.

Keywords: Instructional management, creating a lesson plan, media applications, assessment.

1. Theoretical background

There is no single theory of a good or bad toward instructional management and it is only appropriate teaching methods for specific teaching objectives, Gagne, Briggs, & Wager, (1998). Teacher's transmitting not only a good academic performance, but learning environment is a source of student's engagement, Mayer (2008). Theory of teaching as the transferring arts or delivering of exists knowledge Comb (1964). Thalangsy (2005) viewed some vital functions of teacher profession that related to self-esteemed, sources of motivation, onus, problem-solver, visionary creator, emotion developer, explorer and knowledge pursuer, self-assessor-evaluator, belief and respect the learners. Those events and procedures involved in the decision to initiate a specific activity for an individual student, Tosti and Harmon, (1972); Langford (1968). The motivate learner to focus on learning the task, learning conducive, children-centered, transiting activities, Kounin and Sherman (1979). The four mains content study was the several activities of the academic affair within educational institutions that teacher profession at schooling system should be performed.

Creating a lesson plan, one of the most crucial task and it a main functions of instructor is setting the goal and transmitting the new ideas and other learning activities support to the learners including aiming for the learners, instruction style in such making a solid activity and examples supports, role-play, timeline, field trip, assignments, continuous assessment scheme by peer review mainly, Achinsamacharn, (2012). Creating a lesson plan as aiming, formulating lesson with a solid activity and sample supports and it should be generated in a short form than presenting the actual lesson, Cunningham (2009). It is the way to think about the learner's outcomes and make a good classroom climate. It could be summarized that creating a lesson plan is the instructor's manual in advance to which anticipate the learner's needs of how the instructor will driving the students in achieving the goals and effectively.

Instructional practice, after completing the creating a lesson plan, next step is how effectively in taking it into practical work that needs solid skills to perform based on existing specific sciences and arts possessed. Gill (2013) proposed the crucial ideas of such authority, demonstrator, facilitator, delegator, hybrid. Bloom, Englehart, Furst, and Krathwohl (1956) proposed four steps are the presentation, controlled practice, clues, Practice, and production. In brief, aside from of well-designed lesson plans, the delivery techniques or conveys is one of the most important factors that instructor should be acquired and solid in the major field.

Instructional via technology device, instructional media are something that might well be channeled messages will stimulate the mind, feelings, and the willingness of students so to encourage the creation of learning method in self-learners. Brown, Kenneth, and Srygley (1972) viewed that instructional media are utilized in learning activities will affect the effectiveness of learning. It a tools or materials can help in transiting or conveys something/information to the target participants under all types of publications, visual, audiovisual, statistics/displays, and other electronic devices. It is a fit application to which the learners understand and effective learning.

Instructional Assessment, both terms often used interchangeably, assessment apply for individual's progress or output, while evaluation goes beyond the student's achievement or outcomes Jabbarifar (2009). Instructional management in all level of educational institutions and its learning environment associated with three systems mainly are curriculum, teaching-learning, assessment, and evaluation system, Channam (1997). Besides, Wheatley (2002) added that creating appropriate assessments for objectives, and articulating connections between objectives and standards and benchmarks. It is a process of monitoring the progress of the pupils and makes decisions on the pace of instruction, the grouping of the children, the sequence of the lesson, and the individualization of instruction, Geddes, and Kooi (1969).

Figure 1. The framework of study.

(Source: Designed by author)
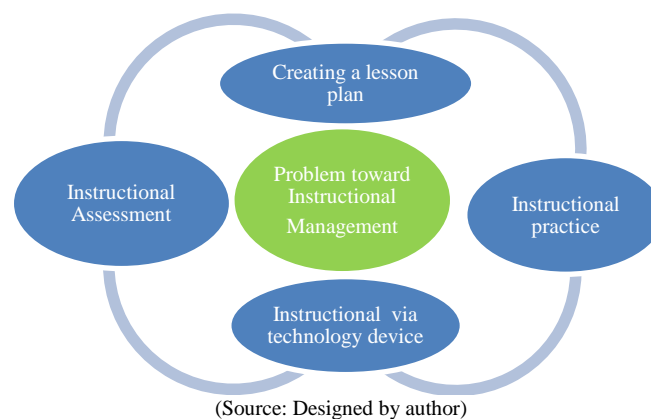
2. Methods

2.1 Problem statements, Faculty of Education is one of several faculties within public universities has a main responsible in producing a good quality of teacher education to be served and employment at Secondary School across the Laos. However, these faculties still facing problems in such instructional culture as tracking the textbook mainly, inadequate teaching material and transmitting techniques, instructional assessment, and student motivations, those became a dilemma chronic issues that led the decline in learning achievement which is needed to be investigated and find the better solutions.

2.2 Target organizations and Participants, there were three out of five Faculty of Education from three out of five Public Universities across the Laos as the target organization Gay and Airasian (2005) and later, the author selected of 196 teaching staff mainly as the sample size from each faculty of education by using tabulation sampling, Krejcie and Morgan (1970). Therefore, 196 teaching staff (92 or 46,9%) were male; and (104 or 53%) were female, those also has been teaching experience < 10 years (63 or 32,1%) and more than 10 > years (133 or 67,9%).

2.3 Research Questions, to arrive the research aims, it would be asked that what-what are the problem level of instructional management? Are there different opinions of teaching staff toward instructional management? and how does the teaching staff's opinions to be the guidelines for better performance of instructional management?

2.4 Research objectives, Research objectives, this study aims to investigate the problem of instructional management, comparison, and gathering the opinions of teaching staff toward the problem-solving in instructional management within three faculties of educations.

2.5 Research Instrument, A self-constructed questionnaire of 38 items in total under the four subscales with an extensive measurement instrument by experts. The four subscales were creating a

lesson plan (12 items); instructional conducting (8 items); instructional media applications (10 items) and instructional assessment (8 items) by using (five points Likert scales) Wade (2006) and also at the end of each subscale, provided open-ended questions for gathering the respondent's extra point of view regarding the problem-solving on the dilemma issues. The data collection took place in Laos between June-July2016by paper-pencil and data analysis through the SPSS program.

3. Findings

3.1 Overall mean score of problem toward the instructional management (n =196)

The data analyzed of four subscales found at moderate problem (Σx = 2.71; SD .73) and we indicated each subscale of high to low mean score found that instructional media application; creating a lesson plan; instructional assessment and instructional conducting (x = 3.00; SD .77; x = 2.68; SD .81; x = 2.62; SD .87 and x = 2.52; SD .92) respectively. Next is describes the detail of three to four first items of each subscale that was a high mean score of the problem toward the instructional management which is can be observed as follows:

1) Creating a lesson plan, the survey showed 4 out of 12 items were high problem that formulate the objective of lesson plan; allocate hour to each activity; specify the aims of each activity and scheduling lesson plan fit the curriculum (x = 3.30, SD=.89; x = 2.96, SD=.93; x = 2.89, SD = 1.05 and x = 2.79, SD = 1.01) respectively, and the rest of 8 items was low problems level.

2) Instructional practice, the study showed 5 out of 8 items were high problem that assessment at the end of each lesson plan; followed each step on the activities designed; performed on each procedure of example designed to support lesson plan, tracking the teaching method designed and assigned student practice of each step taught (x = 2.62, SD=1.12; x = 2.59, SD=.98; x = 2.58, SD = 1.04; x =2.58, SD = 1.12 and x = 2.58, SD = 1.13) respectively and the remaining items were low problem.

3) Instructional via technology device, the survey showed 6 out of 10 items were high problems toward instructional management such as smart board (x = 3.29, SD=1.11, software programs x = 3.22, SD =.96, Audiotape recording x = 3.18,SD = 1.00, Internet-interactive video conferencing x = 3.15, SD = 1.00, Audio-Visual aid x = 3.12, SD = 1.03, and Long Crystal Display or LCD projector x = 3.03, SD = .92. the residuals of 4 items was the low problem.

4) Instructional Assessment, the survey found 4 out of 8 items were high problem that Reminiscence of lesson taught by interviews students individually, portfolio checks of students, Applications the result of assessment and evaluation to enhance of instructional assessment and Post-test at the end of each class-hours performance (x = 2.81, SD=1.04; x = 2.75, SD=1.16; x = 2.73, SD = 1.17; x = 2.72, SD = 1.21) respectively, and the remains of 4 items was low problem.

3.2 The Problem comparison toward the instructional management

Table 1. By gender (n=196).

No	Subscales	Male		Female		t	p- value
		$\overline{x}$	SD	$\overline{x}$	SD		
1	Creating a lesson plan	2.80	0.76	2.74	0.73	0.41	0.56
2	Instructional practice	2.55	0.90	2.53	0.90	0.82	0.88
3	Instructional via technology device	3.10	0.72	3.06	0.71	0.60	0.73
4	Instructional assessment	2.70	0.85	2.69	0.84	0.87	0.93

Table 2. By teaching experiences (n=196).

No	Subscales	< 10 years		> 10 years		t	p- value
		$\overline{x}$	SD	$\overline{x}$	SD		
1	Creating a lesson plan	2.92	0.68	2.70	0.76	0.32	0.04
2	Instructional practice	2.72	0.95	2.45	0.87	0.26	0.05
3	Instructional via technology device	3.15	0.78	0.05	0.68	0.25	0.37
4	Instructional assessment	2.86	0.85	2.62	0.83	0.62	0.05

Table 1 and 2 Shown the comparison of teaching staff's opinions by gender and teaching experiences. These independence variables comprised of male and female and teaching less than 10 years and more than 10 years. The statistical test of both independence variables revealed that there were not statistically significant differentiation opinions of problem toward the instructional management at .05 that those of the respondents were consensus on the chronic dilemma issues which is mainly regarding to the instructional media applications both lack of skills on ICT and other relevant sources supports.

3.4 The suggestions guideline for problem-solving toward the instructional management

The majority respondents suggested that educational leaders within the Faculties of Education invited in this research, they should be provided an equity and equality in learning opportunity to teaching staff on the specific purposes and skill needs urgently associated to the four sub-scales studied mainly. Besides, it was a drastic shocked manner that teaching staff were self-criticism on their functioning responsibilities that they should be minimized the negative behaviors, reduces a single theory tracking, student-centered and any kinds of learning centralization performs by increasing and promoting of peer-review, feedback, reflective learning, role-play, field trip, activity, examples, group focused, learning tasks, self-producing instructional media.

4. Discussion

It is critical collaborating to pillar educational leader within the teacher training institutions, education purpose and context, organization behaviors and culture Soukhavong (2000). It should be included aspiration, prescriptive, achievement, motivation, enrichment, maintenance and supports, Tosti and Harmon (1972). Teaching and learning are inevitably connected processes that involve the fostering of change within the learner, Mayer (2008). A strict curriculum and homework are counterintuitive to student needs, Kohn (1993). The discussions under the four sub-scales with a sum mean score at a moderate level that congruent to the Manivong (2012) investigated on the problem of academic development based on teaching-learning of teachers at Thatluang secondary school, and also congruent to the Soukhavong (2000) studied the situation and problem on instructional management of mathematics of students 5th grade at primary school with a four sub-scale found the problem of instructional media applications; congruent to the Sisomphou (2007) explored on academic assessment and evaluation management affair at Faculty of Education, Laos with four sub-scales found aspect of using teaching media was a high problem, especially lack of teaching media and ignore in using the result of assessment and evaluation to improve teaching skills, and congruent to the Khomswane (1993) studied the situation and problem in teaching-learning of local development course in field of social pedagogy found problem in part of using teaching media and assessment technique and it is congruent to the Unkeo (1997) investigated the situation and problem of teaching-learning the course of social science under the four sub-scales found aspect of instructional media application and assessment and evaluation showed a high problem, and congruent to the Chankhana (1993) studied the situation and problem in teaching-learning of demography environment course found high problem in aspect of using instructional media and assessment students continually. The problem comparison found there is no statistically significant difference among teacher's gender and teacher experience at .05 that is congruent to the Nongtoum (2005) investigated the situation and problem of teachers in teaching performance at primary school of four sub-scales, by gender and teaching experiences and also congruent to the Phiengphanyoukorn (1991) Problem studied on the extra group learning of the teacher students under the four sub-scale found there are no statistically significant different opinions among teacher profession at .05.

5. Conclusion

This study found a vital information and its immense lacuna of problems toward teacher profession within these teacher training institutions, particular teaching staff lack of knowledge, skills and experiences in using smart board; software program, overhead, LDC projector, formulate the objective in making the lesson plan; allocate or fill hour to each activity, reminiscence of lesson taught end of each class through interviews students individually, portfolio checks of students. Regarded the compare of problem toward instructional management, there were no statistical significant differentiation opinions, that it would be said those teaching staffs were consensus on the chronic dilemma toward the teacher professional development in such specific purpose skill toward four profound subscales, meanwhile suggestions of the guideline in problem-solving on the instructional management, the most of the respondents suggested the educational leaders, pillar educators should provide short training program for teaching staff in the specific purpose and offer the equity and equality of learning opportunity among teachers in local and overseas, fairness, adequate subsidies and motivation.

References

Achinsamacharn, S. (2012). planning a lesson plan, K&P books, Sound Incho, Faculty of Education, Rajchaphat leoi, Thailand. [Thesis, p 142-148]

Bloom, B., Englehart, M. Furst, E., Hill, W., & Krathwohl, D. (1956). Taxonomy of educational objective: The classification of educational goals. Handbook I: Cognitive domain. New York, Toronto: Longmans, Green.

Brown, James W., Norbert, Kenneth, and Srygley, Sara K. (1972). Administering educational media: Instructional technology and library services, 2nd ed. New York, McGraw-Hill.

Chankhana, J. (1993). Studied on the situation and problem in teaching and learning of demography environment course. Thailand, [Thesis, p 175-178].

Channam, V. (1997). Study of situation and problem on the implementation of primary school's curriculum, Teacher training institutes, Lei province, Thailand, [Thesis]

Comb, A.W (1965). The Professional Education of Teachers: A Perceptual View of Teacher Preparation. Boston: Allyn and Bacon, p 91. http://mje.mcgill.ca/article/viewFile/6608/4554 (retrieved October 25, 2017)

Cunningham, G (2009). Lesson Plans and Unit Plans: The Basis for Instruction, http://www.ascd.org/publications/books/109051/chapters/Lesson-Plans-and-Unit-Plans@-The-Basis-for-Instruction.aspx (retrieved October 25, 2017)

Gagne R, Briggs L, Wager W, editors. 3rd edition. New York: Holt, Rinehart and Winston (1998). Principles of instructional design. https://www.hcs64.com/files/Principles%20of%20instructional%20design.pdf

Geddes, L. Cleone and Kooi, Y. Baverly. (1969). An Instructional Management System for Classroom Teachers. Vol. 69 No. 7

Gill, E. (2013). What is Your Teaching Style? 5 Effective Teaching Methods for Your Classroom, https://education.cu-portland.edu/blog/teaching-strategies/5-types-of-classroom-teaching-styles/

Jabbarifar, T. (2009). THE IMPORTANCE OF CLASSROOM ASSESSMENT AND EVALUATION IN EDUCATIONAL SYSTEM, (retrieved, October 25, 2017) https://my.laureate.net/Faculty/docs/Faculty%20Documents/INTI%20Conferences/Parallel%20Sessions%204/4C/4C-03-P142%20(Iran).pdf

Khomswane, P. (1993). Studied the situation and problem in teaching-learning of local development course in field of social pedagogy Thailand, [Thesis, p 253-254].

Kohn, A (1993). Choices for Children: Why and How to Let Students Decide, http://www.alfiekohn.org/article/choices-children/?print=pdf (Retrieved 11.11.2017)

Kounin, J. S., & Sherman, L. W. (1979). School Environments as Behavior Settings. Theory into Practice, 18(3), 145. Retrieved from Academic Search Complete Langford, G. (1968) Philosophy and Education: An Introduction. (Macmillan, London, P 160. Price: hard-back 25s., paperback 18s. (1968).

Manivong, K. (2012). Academic affair development of teacher at secondary school, Thaluang, Vientiane capital education service, Mahasarakharm University Thailand, [Thesis, p 211-213].

Mayer, E.R. (2008). Learning and Instruction, Pearson Education, Inc., Upper Saddle River, New Jersey 07458. (retrieved October 30, 2017) 2nd edition. https://www.amazon.com/Learning-Instruction-2nd-Richard-Mayer/dp/013170771X (retrieved September19, 2017).

MOES, (2015). Law on Education: Amended, Lao People's Democratic Republic, Lanexang Avenue, Vientiane capital, Laos: www.moes.edu.la

NUOL (2016). Education Development Strategy Plan 2016-2025, National University of Laos, http://www.nuol.edu.la/

Phiengphanyoukorn, S. (1991). Problem studied on the extra group learning of the teacher students under the four sub-scale at primary schools in Nongkhai, Thailand, [Thesis, p 156-167].

Sisomphou, K. (2007). Studied about academic assessment and evaluation management affair at Faculty of Education, National University of Laos. Faculty of Education Chiangmai University, Thailand [Thesis, p 120-130].

Soukhavong, S. 2000). The study of situation and problem on instructional management of mathematics of students 5th grade at primary school, [Thesis, p 221-310], Laos

Thalangsy, K (2005). Psychology education, Faculty of Education, National University of Laos, (Textbook, 1st Edition)

Tosti, Donald T. and Harmon N. Paul. (1972). *The Management of Instruction.* San Rafael, CA http://pascapbi-3a.blogspot.hu/2017/01/the-instructional-management.html

Unkeo, N. (1997). Investigated the situation and problem of teaching-learning the Course of Social Science at Secondary School in Konkaen city, Thailand, [Thesis, p 192-194].

Wheatley, K. F (2002). Two approaches to teaching transformational lesson planning, Journal of early Childhood Teacher Education, Vol 23, Issue 4.

Wade M. V. (2006). *Likert-type scale response anchors.* Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson University. https://groups.inf.ed.ac.uk/tulips/resources/likert-type-response-anchors.pdf

IMPROVING ARTICULATION BETWEEN TVET COLLEGES AND UNIVERSITY ENGINEERING PROGRAMMES IN SOUTH AFRICA

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Abstract

One of the main goals of South Africa's National Qualifications Framework (NQF) is to facilitate access to education, as well as articulation, mobility and progression between qualifications in order to redress past social injustices. This paper will very briefly introduce the articulation imperatives of the NQF in relation to articulation possibilities for students from Technical and Vocational Education and Training (TVET) Colleges to Higher Education Institutions (HEIs). It was envisaged that this type of articulation would be both uncomplicated and frequent, but this has not been the case. This paper will primarily describe the preliminary finding of a case study seeking to develop an understanding of the enablers of student transitioning between TVET Colleges and HEIs in the engineering sector. These processes are being explored to identify the good practices where they occur and, to propose and develop solutions where processes retard the articulation imperative.

The preliminary results of this case study show both positive and negative aspects of articulation. Epistemic injustice in found in the relationships between TVETs and HEIs, and a limited understanding of articulation and access issues by both TVET and HEI staff is also noted. Inclusion of TVET personnel in the development of new curricula at the universities, or even in the dissemination of information in regard these changes appears to be absent. HEI staff also lack of familiarity with the new TVET curricula, and TVET staff are unfamiliar with the HEIs entrance requirements which may be giving students false expectation regarding the pursuit of further studies. On the positive side, established pathways that often include credit transfer, exist for students from the older 'N course' qualifications articulating into University of Technology (UoT) engineering programmes.

The preliminary findings also confirm the position that the development of epistemically just, collaborative relationships between TVET Colleges and HEIs offering Engineering programmes, may be useful in any effort to improve articulation between these institutions.

Keywords: Articulation, epistemic injustice, TVET, vocational training, engineering education.

1. Introduction

A typical NQF is a formal system describing all qualifications types, at all levels of the higher, secondary and vocational education sectors, often for the purpose of improving the transparency and comparability of these qualifications (Deij et al., 2015). In addition, South Africa's NQF, established in 1995 was designed to facilitate access to education, to improve articulation, mobility and progression between qualifications, as well as to consolidate the then fragmented TVET sector. This was so as to redress the legacies of the apartheid system, which due to institutionalised racial segregation, had created one of world's most unequal societies (Mukora, 2008).

The South African higher education sector currently consists of 26 public Higher Education Institutions (HEIs), comprising twelve traditional universities, eight Universities of Technology (UoTs) and six comprehensive universities, borne out of a merger process started in 2004. The traditional universities offer degree programmes, which are mainly theoretical in nature, whilst Universities of Technology offer both diploma and degree programmes, which are more technical or vocational in nature. Comprehensive Universities were formed by the merger of Technikons, the precursors to UoTs, and traditional universities and offer both types of programmes.

The secondary education sector consists of academic schools, offering the National Senior Certificate (NSC), and Technical and Vocational Education and Training (TVET) Colleges offering a variety of programmes. Prior to 2007 the TVETs offered a series of National Certificates, namely the secondary school level N1, N2 and N3 and the post–secondary school level N4, N5 and N6, all

commonly referred to as 'N Courses'. Upon completion of these Certificates and 18 months of internship students are awarded a National N-diploma by the TVETs. The National Certificate Vocational (NCV), introduced in 2007 and offered at secondary school level only, was intended to replace the N courses as the *de facto* offering at TVETs, but for a number of reasons the N1-N6 engineering programmes are still offered alongside the NCV at many TVET colleges (Allais, 2012; Marock, 2011; McGrath & Akoojee, 2009; Wedekind, 2013).

This paper utilises a broad definition of articulation that encompasses the transition of students from one qualification to another, within or between institutions, with or without the transfer of credits, as well as the curriculum structures that facilitate such articulation. The articulation pathways of the NQF, as shown in figure 1, should easily facilitate the transition of students from TVET Colleges, with either a NCV or an N-diploma, into a HEI degree or diploma. In reality articulation is often difficult if not impossible, due to curricula disjuncture and a number of allied issues (Branson, Hofmeyr, Papier, & Needham, 2015; Malale & Gomba, 2016).

Engineering diploma programmes, at UoTs or comprehensive universities, are one of the few exceptions where established pathways for N course students, often including the possibility of credit transfer, exist. The majority of these engineering diplomas are currently, or in the process of, being replaced by Bachelor of Engineering Technology (BEngTech) degrees, as required by the introduction of the Higher Education Qualification Sub Framework (HEQSF) (DHET, 2013) which may have a significant effect on articulation.

Figure 1. Some of the articulation pathways available on the NQF.
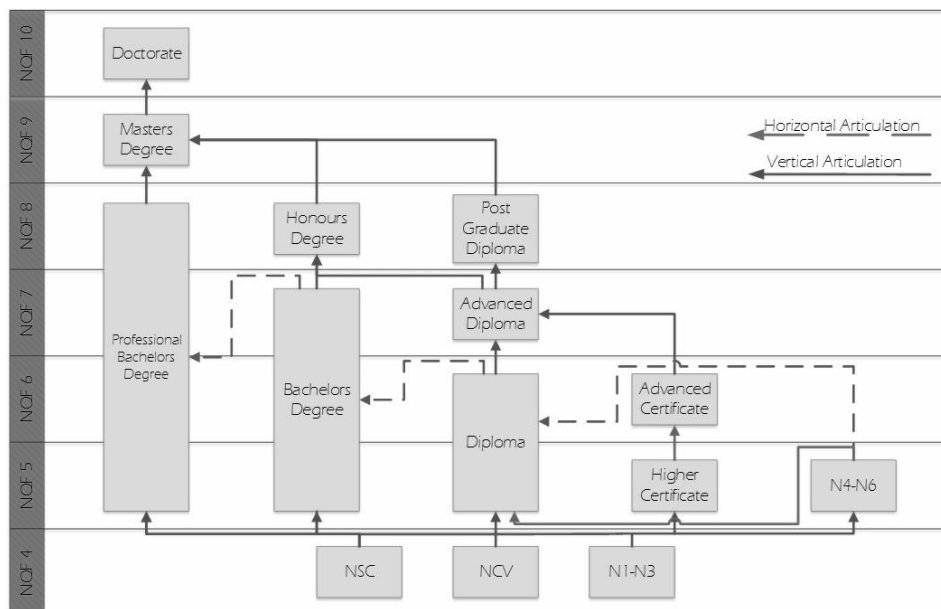
The Durban University of Technology (DUT), in partnership with the South African Qualifications Authority (SAQA), is conducting a research project entitled *Developing an understanding of the enablers of student transitioning between TVET Colleges and Higher Education Institutions.* It seeks to further the understanding of articulation and learning pathways between TVET Colleges and HEIs by identifying where articulation takes place effectively and interrogating the factors that support such pathways. Within this project six case studies are to be undertaken. The engineering case study, described in this paper, is viewed as a developed scenario, where systems for articulation and integration of learning pathways have been implemented and operation for some time.

A National Articulation Baseline Survey (NABS) was undertaken 2016 and involved all 26 public HEIs and all 50 public TVET colleges in South Africa with the aim of exploring the existence and nature of articulation initiatives. Preliminary results show misalignment between the NCV engineering programmes curricula and the entrance requirements of the related HEI, such that they seriously obstruct articulation. Other issues identified include poor communication of HEI programme specific entrance requirements to TVET students, articulation imperatives being viewed as low priority by HEI staff, and a prevalence of epistemic injustice in the relationships between HEIs and TVETs in systemic, institutional and individual terms (Lortan, Maistry, Bolton, & Surtee, 2017).

Epistemic injustice is best described as injustices pertaining to the recognition and transmission of knowledge. Miranda Fricker describes two injustices prevalent in epistemic practices, namely testimonial injustice and hermeneutical injustice (Fricker, 2007). In simple terms testimonial injustice

describes situations where a speaker's words are perceived as less credible than they ought to be, due to prejudice held by the listener. It may also be structural in nature, for example members of certain groups may simply not be asked their opinions as they are regarded as invalid. Hermeneutical injustice describes the inability of individuals to effectively communicate their experiences or knowledge claims, due to a lacuna in the collective understanding. The epistemic injustice described in this survey is primarily testimonial in nature.

2. Research design

Located within the SAQA-DUT research project described above, are a number of case studies, including an in-depth case study of the engineering sector, which aims to further the work carried out in the NABS. The engineering case study will investigate articulation into the Electrical, Electronic and Mechanical Engineering programmes at two UoTs, two comprehensive universities and one traditional university, from their surrounding TVETs.

The research question seeks to explore understandings of articulation, and how collaborative TVET College-HEI relationships may be developed to support student transitioning in engineering programmes. Epistemic injustice is used as a lens through which a participatory action research (PAR) framework will guide the enquiry. The study is qualitative and broadly exploratory, as opposed to constructive or empirical, in nature. Interviews are used for data collection followed by a pragmatic approach to data analysis, where thematic content analysis, deductive analysis and narrative analysis are all utilised where appropriate. The interviews are carried out in a semi-structured manner, either individually or in focus groups. A list of structured questions, together with additional questions, where clarity or expansion of certain issues is required, allows for the following themes to be covered: conceptualisations of articulation; management of articulation, curriculum development relating to articulation and relationship development. The findings of the study will contribute towards the development of a participatory management framework, proposed as an enabler of articulation.

It is imperative that the individuals with the best knowledge of a particular programme's articulation processes at each institution are interviewed. Of the interviews conducted so far, and reported in this paper, the UoT sample consisted of five individuals from the electrical, industrial, mechanical and civil engineering departments, who were the Head of Department and/or the person responsible for student selection into the relevant programme. The traditional university sample consisted of two individuals, namely the deputy HOD for mechanical engineering and the programme co-coordinator for electrical engineering. Both these individuals were recommended by the deputy dean of the faculty as being the best placed to discuss articulation issues. The TVET sample consisted solely of the HOD of engineering programmes for a TVET college. This paper reports on a work in progress and so the sample described above, and the findings described later, do not represent the full sample, but rather preliminary findings of the first phase of the data collection process.

3. Preliminary findings

As mentioned previously, the findings described below, are from a small part of the planned sample and as such should not be extrapolated so as be viewed as representative of the sector as a whole. The picture will of course become clearer once all data has been gathered. Nonetheless, it is worth presenting these results, as the negative aspects broadly mirror those found in the NABS, whilst the positive aspects confirm the selection of the engineering sector case study as being that of a developed articulation scenario, where systems for articulation and integration of learning pathways have been implemented and in operation for some time.

3.1. Traditional university context

The interviewees displayed a fair understanding of articulation but were not familiar with the current articulation pathways available as per the recently promulgated HEQSF. Articulation imperatives were viewed as low priority because the number of students transitioning from TVET Colleges was very limited. In fact the interviewees could only remember one case of an applicant, with a TVET qualification, being accepted into the programme and this was on the basis of the applicant's work experience and age, via a mature age exemption rule, as opposed to the TVET qualification alone. It should be noted here that the articulation pathways from a TVET to a traditional university are quite limited so one would expect this to be a fairly low priority issue.

The departmental handbooks do not show articulation pathways from TVET College qualifications (N course and NCV) nor UoT students, other than the mature age exemption, and as such prospective applicants cannot easily determine whether they qualify for entry to the programme. The

department has an access course in place that allows students who upon completing a UoT qualification may articulate into the BSc programmes, with the possibility of credit transfer. The potential of a Higher Certificate (HC), offered by Colleges in partnership with HEIs, for the purposes of articulation was discussed and the interviewees were supportive of this pathway.

An unexpected aspect of articulation between TVETs and the University was uncovered. Students from a TVET College are employed by the university, working in the engineering labs as interns, allowing the students to gain workplace experience as required by their TVET programmes. This arrangement appears to work well and initially came about due to a family connection, which points to the importance of developing relationships between institutions and the individuals therein. This particular aspect should be explored, especially in the context of UoTs, where if a similar programme could be put in place the students could be articulated into the UoT programme upon completion. Unfortunately the interns at the traditional university ~~UCT~~ were not able to articulate into their programmes

3.2. TVET college context

The Head of Department (HOD) of engineering programmes was interviewed, and was genuinely pleased that initiatives, such as this project, were being undertaken to improve opportunities for his students. He felt that on the whole TVETs were generally ignored by the rest of the higher education sector. He was found to lack clear understanding of articulation, with articulation seen only as the transitions from TVETs to UoTs. There was a lack of awareness of the HEQSF, and thus how the introduction of the BEngTech by UoTs could negatively affected articulation opportunities for N course students. This is of particular concern since the N courses were seen to provide a solid foundation for articulation, and despite the introduction of the NCV qualifications, were still believed to be the best articulation option. The NCV was acknowledged as problematic for articulation purposes, in the engineering sector, due to insufficient physical sciences content.

The HOD reports sporadic meetings with partners from the local UoT but no working partnership so to speak. There has been no engagement with regards to the planned introduction of new UoT programmes nor the requirements or articulation options for either the old or the new programmes. The articulation pathways offered by the Higher Certificate was discussed and the interviewee was in favour of this, or for that matter any measure that would broaden the pathways available for TVET students.

3.3. UoT context

The interviewees showed limited understanding of articulation, with little or no attention given to articulation during development of the new BEngTech curricula. Most departmental handbooks show articulation requirements for the NCV, but not for the N courses. This information, including credits transfer for a number of N courses, is available on leaflets and often distributed to prospective students upon request.

The interviewees believed that a significant number of students articulate into the National diploma programmes via the N courses. This could be done in one of two ways, through students completing a full N1 – N4, allowing direct access into a National diploma, or by utilising the N courses as a 'top up'. The university does not offer a bridging course for NSC students who, although meeting the National diploma entry requirements as laid out on the NQF, do not do not meet the programme specific requirements for mathematics or physical sciences. The departments recommend that such students 'top up' their NSC by completing N4 mathematics and engineering science at a local TVET College whereafter they may be considered for placement.

The interviewees had mixed opinions as to whether the performance of TVET students relative to NSC students was better or worse, but all opinions were completely anecdotal, as no evidence to this effect was available. The interviewees agreed that if evidence showed that such students' performance was similar to NSC students' it would greatly improve the argument for prioritising TVET students for placement.

The interviewees were not aware of any students who had transitioned from NCV qualifications into their respective programmes. They pointed out that the NCV alone would be insufficient to gain access, due to the lack of physical science within its curricula. Prospective NCV students are advised that they would need to complete the NCV as well as extra science modules from the N courses in order to be considered. Staff supported articulation into the BEngTech (due for introduction in 2018) via the Higher Certificate, especially if it was formulated such that it provides credit transfer, in the form of exemptions for certain first year BEngTech subjects.

3.4. Notes on preliminary findings

The respondents reported positively on the established pathways, which often include credit transfer, that exist for students from the older N course qualifications articulating into UoT engineering programmes. What is particularly disturbing is that all respondents seem unaware, or unconcerned, that

this pathway will for all intents and purposes, cease to exist with the introduction of the BEngTech. The only viable option for articulation will be completion of the entire National N Diploma which incorporate the N4-N6 Certificates, whereas currently the majority of transitioning students have only the N4 certificate. Further to this, the gazetted requirements for NCV students transitioning to BEngTech degrees is onerous to the point that it would restrict articulation. The lack of sufficient physical science within the NCV engineering programme curricula already renders articulation near impossible. The 'top up' option will still be available to NSC students, who meet the generic entrance into a university degree, but are lacking programmes specific requirements. Although this is positive in itself, it does help students who have completed their secondary education at a TVET College.

The poor grasp of, or disinterest in, TVET College programmes and standards and their students, by HEI staff points to epistemic injustice in their relationships. Inclusion of TVET personnel in the development of new curricula at the UoT was absent, but more important is that, the dissemination of information in this regard is also absent. This preliminary research confirms the position that the development of epistemically just, collaborative relationships between TVET Colleges and HEIs offering engineering programmes, is essential in any effort to improving articulation between these institutions. The development of a Higher Certificate, as a viable transitioning programme, was seen positively by all involved. The collaborative development of the Higher Certificate by HEIs and TVETs, and the offering of the same by the TVETs, in compliance with the HEQSF, could well prove to be a catalyst for the development of epistemically just relationships.

4. Concluding comments

Going forward, once the full sample is interviewed, the key enablers and impediments present will be identified and described in greater detail. It is however already apparent that there are at least two areas which will need addressing, namely technical or procedural impediments to articulation, and the foundation and development of epistemically just, collaborative relationships. By implementing these changes we would hope to further the vision of the NQF by improving access, articulation, mobility and the progression of students in the TVET sector.

References

Allais, S. (2012). Will skills save us? Rethinking the relationships between vocational education, skills development policies, and social policy in South Africa. *International Journal of Educational Development, 32*(5), 632-642.

Branson, N., Hofmeyr, C., Papier, J., & Needham, S. (2015). Post-school education: Broadening alternative pathways from school to work: South African Child Gauge 2015. Cape Town: Children's Institute, University of Cape Town. 2015.

Deij, A., Graham, M., Bjornavold, J., Grm, S. P., Villalba, E., Christensen, H., Singh, M. (2015). Global Inventory of Regional and National Qualifications Frameworks. Volume I: Thematic Chapters. *UNESCO Institute for Lifelong Learning*.

Department of Higher Education and Training. (2013). White Paper for Post-School Education and Training. Building an expanded, effective and integrated post-school system: Department of Higher Education and Training Pretoria.

Fricker, M. (2007). *Epistemic injustice: Power and the ethics of knowing*: Oxford University Press.

Lortan, D., Maistry, S., Bolton, & Surtee. (2017). Articulation Between Technical and Vocational Education and Training (TVET) Colleges and Higher Education Institutions (HEIs). A National Articualtion Baseline Survey - Unpublished: South African Qualifications Authority.

Malale, M. M., & Gomba, G. K. (2016). *Stakeholders' Perceptions about Technical and Vocational Education and Training Colleges in South Africa.* Paper presented at the South Africa International Conference on Education, Pretoria.

Marock, C. (2011). *Considering key themes relating to the objectives of the NQF and the postschool objectives.* Johannesburg: Centre for Education Policy Development

McGrath, S., & Akoojee, S. (2009). Vocational education and training for sustainability in South Africa: The role of public and private provision. *International Journal of Educational Development, 29*(2), 149-156.

Mukora, J. (2008). *A history of RPL in South Africa.* Paper presented at the Colloquim on Recognition of Prior Learning (RPL) for the upgrading and up-skilling of teachers in South Africa, Pretoria.

Wedekind, V. (2013). Education, training and the 'precariat': An overview of the South African education and skills landscape: University of KwaZulu-Natal Durban, South Africa.

A META-ANALYSIS ON THE RELATIONSHIP BETWEEN CHARACTER EDUCATION AND STUDENT ACHIEVEMENT AND BEHAVIORAL OUTCOMES

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Abstract

An extensive meta-analysis, including 52 studies, was undertaken on the relationship between character education and student achievement- and behavioral- outcomes. Additional analyses were done to determine whether the effects of character education differed by student grade level, locale, and race, etc. The results indicated that character education is associated with higher levels of educational outcomes, no matter what type of standardized or non-standardized measure was employed. Character education was also related to higher levels of expressions of love, integrity, compassion, and self-discipline. Overall, character education had somewhat greater effects for children in high school rather than those who were in elementary school. The effects of character education did not differ by the race of the children. The significance of these results is discussed.

Keywords: *Character education, moral education, meta-analysis, academic achievement, student behavior.*

1. Introduction

For centuries character education played a central role in the Western K-12 curriculum (Krisjansson, 2015; Ryan & Bohlin, 1999). As Thomas Lickona in his article, "The Return of Character Education" (1993, p. 6) notes, "Character education is as old as education itself. Down throughout history, education has had two great goals: to help people become smart and to help them become good." Moreover, most of the founders of the modern day education system including Plato, Cicero, and the early Christians believed that developing loving, compassionate, and self-disciplined individuals was actually more important than creating intellectually sophisticated people (Brooks, 2011; Jeynes, 2000, 2007; McClellan, 1999). Thomas Lickona (1991, p. 228) propounds what is probably the most recognized definition in contemporary society when he states, "Character education is the deliberate effort to develop the virtues that enable us to lead fulfilling lives and build a better world." In spite of the educational foundation mentioned above, many teachers have become reluctant to give character instruction in the classroom (Ryan & Bohlin, 1999).

Given that the inclusion of a strong character instruction program is no longer the standard practice in public schools and many teachers question its salience (Lickona, 2004), it is vital that a meta-analysis be undertaken to determine its overall efficacy and to gain insight into whether the effectiveness of character education varies by age and the type of program initiated.

2. Methods

In order to obtain the studies used in the meta-analysis, a search was undertaken to locate the relevant studies on character education. The first procedures to be used to locate these studies involved a computer search using 60 research to find studies examining character instruction and/or training. The search terms were character education, character instruction, moral education, values, values education, virtue, virtue education, self-discipline, and many other similar terms. Reference sections from journal articles on the character education were also examined to find additional research articles. The research team obtained a total of 90 studies that addressed the relationship under study, and found 52 studies that

had a sufficient degree of quantitative data to include in this meta-analysis. Among the 52 studies that possessed a sufficient degree of quantitative data to include in this meta-analysis, the total number of subjects was approximately 225,779.

Effect sizes were computed from data in such forms as t tests, F tests, p levels, frequencies, and r-values via conversion formulas provided by Glass and his colleagues (Glass, McGaw & Smith, 1981). When results were not significant, studies sometimes reported only a significance level. In the unusual case that the direction of these not significant results was not available, the effect size were calculated to be zero.

For studies with manipulations the standardized mean difference was used to estimate the effect of character education. The *d*-index (Cohen, 1988) is a scale-free measure of the separation between two group means. Calculating the *d*-index for any comparison involved dividing the difference between the two group means by either their average standard deviation or by the standard deviation of the control group. In the meta-analysis, the researchers subtracted the experimental group mean from the control group mean and divided the difference by their average standard deviation. As a supplement to these analyses, the Hedges' "g" measure of effect size was used (Hedges and Vevea, 1998). Since it employed the pooled standard deviation in the denominator, it customarily provided a more conservative estimate of effect size. Hedges also provided a correction factor that helped to adjust for the impact of small samples.

A weighting procedure was used to calculate average effect sizes across all the comparisons. First, each independent effect size was first multiplied by the inverse of its variance. The sum of these products was then divided by the sum of the inverses. Then, 95% confidence intervals were calculated. As Hedges and Vevea (1998) recommend, all the analyses were conducted using fixed-error assumptions in one analysis and applied random-error assumptions in the other.

Tests of homogeneity were completed on the overall character education variables to gain a sense of the consistency of specific character education measures across studies.

Two researchers coded the studies independently for quality, the presence of randomization, and whether the definitional criteria the achievement gap are met. Study quality and the use of random samples will be graded on a 0 (lowest) to 3 (highest) scale.

This meta-analysis examined the relationship between character instruction in and pre-kindergarten-college freshman school outcomes. This meta-analysis first (research question #1) addressed whether there is a statistically significant relationship between character education and pre-kindergarten to college freshman student achievement and behavioral outcomes. A second question assessed whether the effects of character education differed by the age of the student (research question #2). The third analysis (research question #3) specifically focused on the relationship between character education and outcomes for students of color, as well as for students of low-socioeconomic status (low-SES). The final analysis addressed the effects of character education on specific measures of achievement and behavior (research question #4).

3. Results

The results indicated that there is a statistically significant relationship between character education instruction and overall student outcomes. Overall, the results of the meta-analysis indicated that there is a relationship between character education for kindergarten through college freshman youth as expressed in academic and behavioral outcomes combined.

The effect size for the U.S. overall (*Research Question #1*) character education variable was, .31 ($p < .01$), 95% *CI* [.10, .52], of a standard deviation, which was statistically significant at the .01 level of probability, when no sophisticated controls were used. The effect size was also statistically significant when sophisticated controls were used, .17, ($p < .05$), 95% *CI* [.02, .32].

The effect sizes for character education varied considerably by age, especially in the academic achievement measures. The results for high school students were larger for either elementary or middle school students (*Research Questions #2*). The effects of character education were very similar for all races under study (*Research Questions #3*). The relationship between character education and academic and behavioral outcomes overall for minority students were statistically significant both when sophisticated controls were not utilized and also when they were. The effects were, .36 ($p < .01$), 95% *CI* [.10, .62], of a standard deviation unit when sophisticated controls were not used and .27 ($p < .05$), 95% *CI* [.04, .50], of a standard deviation unit when sophisticated controls were utilized. There were many components of character education that were effective (*Research Questions #4*). The other behavioral outcomes included in the meta-analysis that yielded statistically significant results only included enough data to run analyses that did not use sophisticated controls. The results indicated that character instruction was associated with a smaller number of suspensions, .53 ($p < .05$), 95% *CI* [.09, .97], higher levels of respect, .73 ($p < .01$), 95% *CI* [.20, 1.26], higher levels of love, .45 ($p < .05$), 95% *CI* [.10, .80], better

social skills, .44 (*p* < .05), 95% *CI* [.07, .81], a greater incidence of honesty, .42 (*p* < .05), 95% *CI* [.09, .975], and few expressions of bad behavior, .31 (*p* < .05), 95% *CI* [.03, .59]. Only moral judgment yielded effect sizes that albeit were in the expected direction, .33 (*p* < .05), 95% *CI* [.02, .64], and .28, but were only statistically significant when not utilizing sophisticated controls.

In addition to the above results, the length of time character education was implemented also was related to larger effect sizes.

4. Discussion

Probably the most interesting set of results were those that emerged by age. The effects for character education were the largest for high school students, the second largest for middle school students, and the smallest for elementary school students. This trend was especially evident for academic achievement measures. These results are especially salient given that the overwhelming percentage of efforts to place character instruction in the schools is made at the elementary school and kindergarten levels. These results challenge that strategy.

The results of this study quite strongly suggest that teachers and leaders need to revisit the potential value of character instruction.

References

Brooks, D. (2011). *The social animal: The hidden sources of love, character and achievement*. New York: Random House.
Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
Glass, G. V., McGaw, B. & Smith, M. L. (1981). *Meta-analysis in social research*. Beverly Hills: Sage.
Hedges, L. V. & Vevea, J. L. (1998). Fixed and random effects models in meta-analysis. *Psychological Method*, *3*, 486-504.
Jeynes, W. (2007). *American educational history: School, society & the common good*. Thousand Oaks, CA: Sage.
Jeynes, W. (2000). Assessing school choice: A balanced perspective. *Cambridge Journal of Education, 30* (2), 223-241.
Krisjansson, K. (2015). *Aristolelian character education*. New York: Abington.
Lickona, T. (1991). *Educating for character:* New York: Bantam Books.
Lickona, T. (1993). The return of character education. *Educational Leadership, 51* (3), 6-11.
Lickona, T. (2004). *Character matters*. New York: Simon & Schuster.
McClellan, B. E. (1999). *Moral education in* America. New York: Teachers College Press.
Ryan, K. & Bohlin, K. E. (1999). *Building character in schools*. San Francisco: Jossey-Bass.

CHARACTERIZATION OF THE "EDUCATION & EDUCATION RESEARCH" JOURNALS INCLUDED IN THE JCR

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Abstract

The evaluation of the quality of scientific journals is a topical issue. The implementation of an evaluation policy based on international indicators has contributed to improving the quality and visibility of journals from different countries, measured through their indexing in the Journal Citation Reports (JCR) databases. Currently, in some countries, such as Spain, the main criterion used to evaluate the performance of individuals, institutions or research groups is the number of publications made, especially in high impact journals in the JCR. However, the adoption of international evaluation criteria based on the JCR has been the subject of numerous criticisms by researchers, who are forced to send their research papers to foreign journals to the detriment of the journals of their own country, since in order to obtain a positive evaluation it is fundamental to publish in high demand journals, mainly published in English. In this competitive environment, where the pressure to publish in quality journals is a reality, it is useful to know the profile of the journals of your specialty in order to be able to select the one that is most appropriate for the dissemination of your own work.

Keywords: Education journals, scientific journals, impact factor, JCR, bibliometrics.

1. Introduction

Contemporary science needs powerful communication tools to fulfil its functions of universalization, updating and certification of knowledge (Villamón, Devís and Valenciano, 2005). Scientific publications continue to be the main vehicle for the dissemination of science and play a fundamental role in the different stages of research activity. Its study and evaluation allows to obtain data of great value that, applied to countries, institutions, geographical communities, etc., make it possible for decision-making in scientific polity to be made with greater objectivity (Pérez Álvarez-Ossorio, 1999). For this reason, the use of bibliometric indicators, which quantify and analyse research through scientific publications, has experienced a great boom (Claudio-González, Martin-Baranera and Villaroya, 2017; Rodriguez and Abadal, 2014). These indicators are currently an objective and effective method for analysing the activity of scientific communities in a specific country, region or institutional sector. They also allow obtaining valuable information about the structure of the different areas or scientific disciplines, as well as analysing their evolution over time. However, not all journals reflect the same prestige, professionalism, respectability, specialization, universality and transcendence. For that reason, it is not possible for every publication to have the same curricular value. Therefore, it is necessary to establish criteria that allows a classification to mediate the quality of the various publications.

The institutional pressure exerted on the group of researchers for their promotion and consolidation increases the need to have widely disseminated and recognized scientific journals for the valuation of their contributions. Not all scientific journals have the same relevance as a means to disseminate research production. Researchers tend to select those journals that allow them greater opportunities for professional growth and recognition, make their work more accessible and, therefore, have greater guarantees that their articles can have an impact on the scientific community (Molina, Gómez, Cañadas, Gallardo and Lupianez, 2011; Osca-Lluch et al., 2005). Every community requires a means of expression through which it registers, transmits and exchanges experiences among its own members and those of other groups. Scientific culture cannot exist outside scientific publications, but not all have the same prestige and degree of influence in the scientific community. Its recognition depends to a large extent on its quality and visibility (Osca-Lluch, Gónzalez-Sala, Fonseca and Civera, 2017).

The evaluation of scientific journals with bibliometric indicators has been dominated by the impact factor. Since its launch in the early seventies, the impact factor has been an indicator that has been criticized as a determining factor in the processes of scientific evaluation (Garfield, 1972; Jacsó, 2009). In some countries, such as Spain, for most evaluators there seems to be only one star indicator, the impact factor, which is published annually in the JCR (Quintas-Froufe, 2016) and, for this reason, for some researchers, one of the most important criteria when choosing a journal to publish a work is its impact factor. In this way, we do not choose the publication that will divulge our work among experts in the field, but we choose the option that will have the most favourable impact on promotion and professional recognition.

The objective of this work is to carry out a bibliometric analysis of the education journals included in the "Education & Education Research" thematic category of the JCR database, in order to know the countries that lead the publications in this discipline, their position, language of publication and its relationship with other related disciplines.

2. Methodology

The 236 journals included in the "Education & Education Research" category of the 2016 JCR (corresponding to the 2017 edition) were analysed. It is a descriptive study through document analysis. In the study, the educational journals were analysed and compared, collecting all the data referring to title, country of publication, language of publication, publishing institution, quartile, thematic area in a database designed ad hoc for this work. For this statistical calculation, the Excel program was used and the Pakej and UCINET programs were used to create the network graphic.

3. Results

3.1. Temporary evolution of the journals in the "Education & Educational Research" category of the JCR

The current number of education journals included in the "Education & Educational Research" category of the JCR Social Sciences edition database is 236. As can be seen in figure 1, the presence of education journals included in this thematic category has grown considerably over the years. The increase in the number of education journals in 2016 compared to 1997 is 131 per cent.

Figure 1. Evolution of the number of journals.
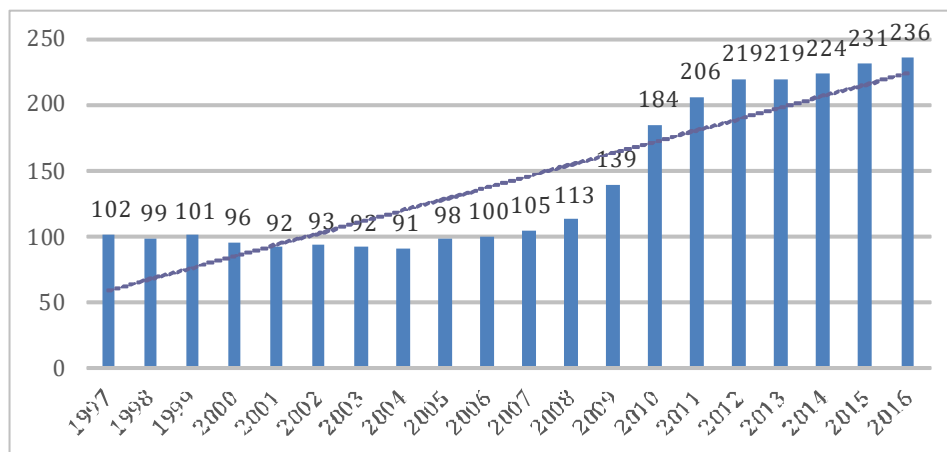
3.2. Countries where journals are published

When analysing the countries of edition of the journals included in the thematic category under study, it can be seen that they are edited by 18 countries, being the United States and United Kingdom, the countries that have indexed a greater number of journals, 89 and 88 respectively. These two countries represent 75% of all journals included in this thematic category. Other countries that stand out for are the Netherlands (18 journals), Australia (8 journals) and Spain (7 journals).

3.3. The publication languages

It is observed that more than 94% of the journals use English as the language of publication. The other languages used by the journals analysed to publish their works are German (3 journals), Spanish (2 journals), Croatian (1 journal), Italian (1 journal) and Turkish (1 journal). There are 5 journals (2.12%)

that use several languages to publish their work (multi-lingual), being in these cases, the publication of works in English and Spanish.

3.4. Publishing institutions

An aspect of particular importance is to know the weight that the different publishing entities of the journals have. For the study of the scientific activity of institutions, at a general level, the centres were grouped in the following types: Universities, Commercial Publishers, Professional Foundations and Associations and Others. Most of the journals included in the thematic category "Education & Educational Research" of the JCR, are edited by Commercial Publishers (78.39%) and Universities (12.29%). The other two sectors responsible for the publication of journals are the Professional Foundations and Associations (5.08%) and Other sectors (4.24%).

3.5. Distribution of the number of journals by countries and quartiles

One of the most important criteria when choosing a journal to publish a work is its impact factor. For researchers it is increasingly important to know the position of the journals of their scientific field in the JCR databases, since it is one of the criteria taken into account in many countries by the evaluation agencies of the research activity (De Filippo, Pandiella-Dominique and Sanz-Casado, 2017) and, for this reason, a large part of the time is dedicated by researchers who are concerned in studying the impact factors and quartiles of journals and sometimes pressured by the evaluation that will be received by the evaluation agencies, assessments that affect the researcher's professional career.

The evaluation of scientific contributions according to location by scientific areas in the JCR, with the impact factor as a basis to know how to place the researcher in his scientific field is quite wrong, because not a high number of publications is the same quality, or that it is published in journals with a high impact factor is equivalent to a greater scientific significance (Reverter, 2012).

It is observed that of the 18 countries that publish journals included in the "Education & Educational Research" category of the JCR, there are only 6 countries that have a journal positioned in the Quartile 1 (Canada, Netherlands, New Zealand, United Kingdom, United States and Spain), being the United Kingdom and United States those that have a greater number of journals in this position of privilege. In Quartile 2, there are also 6 countries that have a journal included in this position (Australia, Netherlands, New Zealand, United Kingdom, United States and Spain) and again highlighting that United Kingdom and United States are the two countries with the largest number of journals in this quartile. In Quartile 3, there are 11 countries that have journals in that position and 15 countries that have a journal occupying Quartile 4. As it is observed, the Netherlands, United Kingdom and United States, are the three countries that have the largest number of journals located in privileged positions.

3.6. Network analysis applied to the thematic areas of journals

In JCR databases, the same journal can be included in more than one thematic category. In order to know the relation of the journals indexed in the thematic category "Education & Educational Research" with other thematic areas of the JCR, a network analysis has been carried out to the subjects in which the journals included in this category have been classified. The starting point of our work has been to create a matrix where all the thematic categories in which the 236 journals under study have been classified have been collected. The matrices allow collecting the data of all these cases. The matrices allow gathering the data of all these cases, however, when it comes to very large matrices it is difficult to intuit through reading a relationship. With the graphics, the opposite happens. The network graphs allow intuiting clearly the existing relationships between the actors. Network graphics have two basis elements: points and lines, which represent, respectively the actors and their relationships. In this case, the points are the thematic categories of the journals and the lines that are established between them.

Figure 2 shows the network formed with all the thematic areas in which the journals indexed in the "Education & Educational Research" category have also been classified. The total number of thematic categories of the JCR in which these journals have been included is 33. This means that journals indexed in the "Education & Educational Research" thematic area also included simultaneously in one of the other 32 thematic areas of the JCR. When looking at the graph of the network, the first thing that draws attention is that all the thematic areas are part of a single component and that the thematic areas with which there is a greater relationship is with "Psychology Educational" and "Linguistics", this means that these are the areas in which there are a greater number of journals included simultaneously. As expected, there is a relationship with thematic categories related to education ("Education Special" and "Education Scientific Disciplines") or psychology ("Psychology Applied", "Psychology Developmental", "Psychology Educational", "Psychology Mathematical", "Psychology Multidisciplinary" and "Social Psychology"), but draws attention to the relationship with other more unexpected thematic areas, such as those related to sociology ("Social Sciences Interdisciplinary", "Social Sciences", "Mathematical Methods", "Social Work" and "Sociology"), economy, anthropology or criminology & penology.

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Figure 2. Network of the thematic areas of journals.
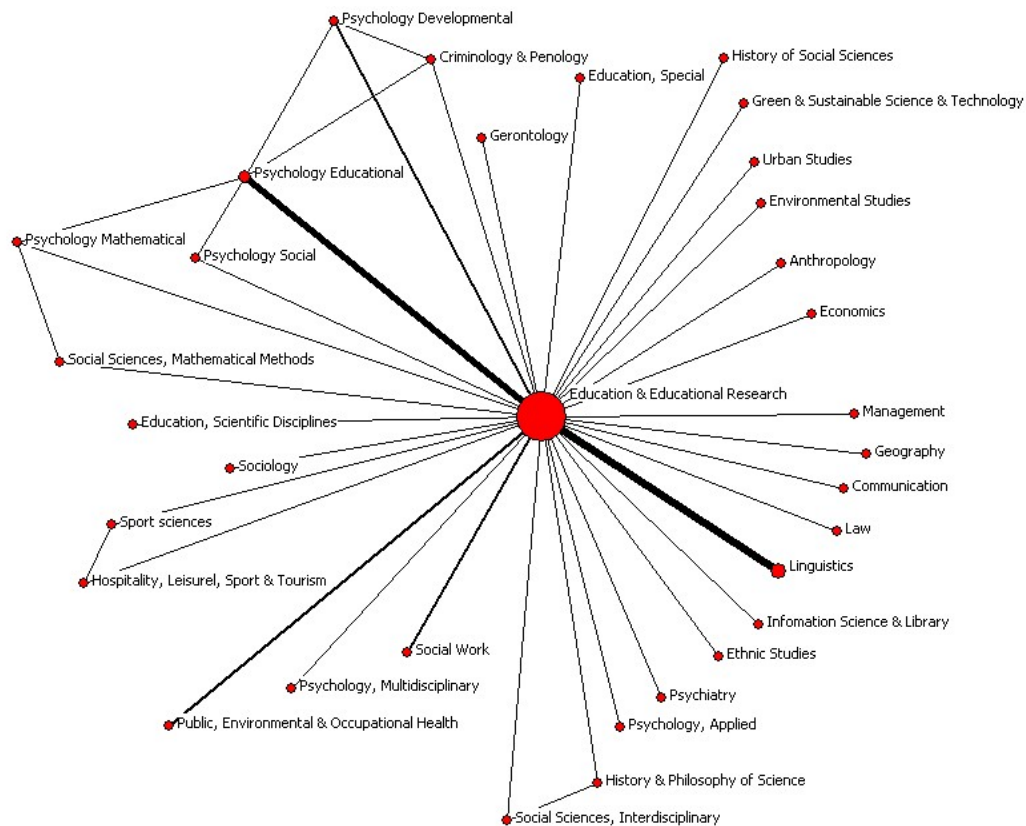
4. Conclusions

Scientific journals are, in many scientific disciplines, the main vehicle for the dissemination of science. Its study and evaluation is reaching an important development in recent years in the different areas or scientific disciplines, due to the relevant role they play in the framework of scientific research, as tools that are fundamental for scientific dissemination and that, moreover, enable the advancement of knowledge and achieve scientific excellence. Scientific publications become the main requirements for academic promotion, to obtain funding through research projects or for recognition among the scientific community. Every community requires a means of expression through which it registers, transmits and exchanges experiences among its own members and those of other research groups. However, not all publications have the same prestige and degree of influence in the scientific community. Its recognition depends to a large extent on its quality and visibility (Osca-Lluch, 2012).

The objectives for which a scientific journal is created and maintained are apparently the dissemination of research results within the same scientific-professional community. However, currently publication in international media has become one of the hallmarks of scientific activity and the computation of publications is used to measure the relative weight of a country or a group of countries in world scientific production for a certain discipline. The validity of the figures obtained obviously depends on the quality of the databases used and their representativeness (Callon, Courtial and Penan, 1995). However, for some authors, the assessment of scientific contributions according to the impact of the journals where the papers have been published is quite wrong, because the fact that it is published in journals with a high impact factor is not equivalent to a greater scientific significance and, above all, when there are studies that show that most articles published in high impact factor journals do not receive too many citations among the works of other researchers, and that about 50% do not receive any (Gallagher, 2008; Reverter, 2012) and that can cause pathologies in researchers who, obsessed with publishing in impact factor journals, manipulate the data of their research (Buela-Casal, 2014).

One of the conclusions drawn from this study is that it is relevant that the edition of journals included in the thematic category "Education & Educational Research" of the JCR, increases with the years, going from the 102 journals included in that category in the year 1997 to 236 that there is currently. It is observed that the increase in the number of journals takes place in 2009 (with 139 journals) and that, since then, it has not stopped growing. As expected, although there are journals that admit works in different languages (Croatian, German, Italian, Spanish or Turkish), nevertheless, English is used by

almost all journals in this discipline, exceeding 94%. One aspect related to the publication of publications is that they are published, mainly by Commercial Publishers (78.39%) and Universities (12.29%).

Regarding the countries where the publications are published, it is noteworthy that although the journals analysed belong to 18 different countries, however, there are only 7 countries that have a journal located in privileged positions (Quartiles 1 and 2) and that two countries, the United Kingdom and United States, are those that have not only a greater number of journals indexed in this thematic category of the JCR, but also they are those that have a greater number of journals occupying the best positions.

It is observed that the fact that the same journal can be classified in more than one thematic category in the JCR, does not imply that this journal will occupy a better position (Quartile), although it is observed that the journals that occupy a greater impact factor and, therefore, better positions are those that are related to other scientific disciplines such as "Linguistics" and "Psychology Educational". It is important to highlight that journals are the source of information that will allow us to know the relationship between different scientific disciplines and that the application of network analysis to the representation of the thematic areas used to classify scientific journals in different databases, can be used as a support tool for the location of journals and works that may be related to the object or subject of study and which, because they are classified in other thematic areas, could go unnoticed.

In short, education journals have a greater presence in the "Education & Education Research" category. It would be desirable that these journals not only continue to increase in number, but that the journals published in some emerging countries were increasingly accepted by the scientific community and occupy positions of privilege. The data obtained in this study show that educational journals are the most visible at the international level, however, we consider it would be interesting to analyse, in later studies, the circulation of education journals in other databases, such as Scopus, as well as the emerging education magazines included in the WoS database, which are not yet included in the JCR.

References

Buela-Casal, G. (2014). Pathological publishing: A new psychological disorder with legal consequences? *The European Journal of Psychology Applied to Legal Context, 6(2)*, 91-97.

Claudio-González, M.G., Martin Baranea, M. and Villarroya Planas, A. (2017). La edición de revistas científicas en España: una aproximación descriptiva. *Anales de Documentación, 20(1)*, from: http://dx.doi.org/10.6018/analesdoc.20.1.265771.

De Filippo, D., Pandiella-Dominique, A. and Sanz-Casado, E. (2017). Indicadores para el análisis de la visibilidad internacional de las universidades españolas. *Revista de Educación, 376*, 163-199.

Gallagher, R. (2008). Speaking your mind. *The Scientist, 22*, 13.

Garfield, E. (1972). Citation analysis as a tool in journal evaluation. *Science, 178(60)*, 471-479.

Jacsó, P. (2009). Five-year impact factor data in the Journal Citation Reports. *Online Information Review, 33(3)*, 603-614.

Molina, M., Gómez, P., Cañadas, M.C., Gallardo, J. and Lupianez, J.L. (2011). Calidad y visibilidad de las revistas científicas: el caso de PNA. *Revista Española de Documentación Científica, 34(2)*, 266-275.

Osca-Lluch, J., Civera, C., Tortosa, F., Quiñones, E., Peñaranda, M. and López, J.J. (2005). Difusión de las revistas españolas de psicología en bases de datos nacionales e internacionales. *Anales de Documentación, 8*, 165-186.

Osca-Lluch, J., González-Sala, F., Fonseca Baeza, S. and Civera Mollá, C. (2017). Historia de la investigación española en psicología vista a través de las revistas científicas recogidas en la Web of Science durante el período 2003-2012. *Universitas Psychologica, 16 (2)*, 1-10.

Pérez Álvarez-Ossorio, J.R. (1999). La ciencia y la tecnología españolas a través de sus publicaciones. *Arbor, 639*, 303-306.

Quintas-Froufe, N. (2016). Indicadores de calidad de las publicaciones científicas en el área de ciencias sociales en España: un análisis comparativo entre agencias evaluadoras. *Revista de Investigación Educativa, 34(1)*, 259-272.

Reverter Masià, J. (2012). Publicaciones científicas y evaluación de la vida profesional de un científico. *Nutrición Hospitalaria, 27 (4)*, 1368-1369.

Rodrigues, R.S. and Abadal, E. (2014). Scientific journals in Brazil and Spain: alternative publishing models. *Journal of the Association for Information Science and Technology, 65*, 2145-2151.

Villamón Herrera, M., Devís Debvís, J. and Valenciano Valcárcel, J. (2005). Análisis de la visibilidad de las revistas científico-técnicas españolas de ciencias de la actividad física y del deporte. *Revista de Psicología del Deporte, 14*, 253-267.

CREATIVITY AT SCHOOL? - PERFORMANCE DIMENSIONS IN THE CASE OF POLYTECHNIC HIGHER EDUCATION*

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Abstract

This paper reports on the preliminary results of a project that aims to assess the state of the art of creativity in Portuguese polytechnic higher education institutions. The framework was based on the dimensions of creative potential and performance (e.g. Runco, 2007a and b) and on previously developed studies (Piteira, 2016). The research question that drove this work was: *What is the state of creativity in the different schools that comprise the Lisbon Polytechnic Institute according to their creative potential and performance and with a view to developing future efficient innovation strategies?* This was followed by a qualitative case study approach, which would later enable a cross-case comparison between the schools considered to be the most creative. The eight schools of the Lisbon Polytechnic Institute were included in this exploratory analysis; the dimensions and related outputs of creative potential and performance were identified through the analysis of newspapers, websites, and newsletters. Following this research design, exploratory interviews with actors with responsibility over innovation and entrepreneurship policies and strategies in the LPI were conducted so as to validate the content analysis derived from the newspapers, websites, and newsletters. The results show how these schools compare to one another in such creative potential and performance dimensions in terms of creative products and services outsourced to the community; projects with business potential that have entered in the entrepreneurship competitions; and awards and honourable mentions in (inter)national competitions. The salient finding is that efforts to implement strategies to trigger creativity in these schools are underway. Suggestions are provided for future research and effective strategies in the field of innovation through creativity in the polytechnic higher education system are discussed.

Keywords: Creative potential and performance, case studies, polytechnic higher education.

1. Introduction

Considering the current scenario, higher education institutions are not immune to the pressure of innovation and each of them has a double responsibility as far as creativity is concerned, particularly regarding the creation and management of knowledge. Gaspar and Mabic (2015) have analysed European institutional reports that link higher education to creativity, knowledge, and innovation and have stressed the importance of the creative mix of individual talent and experiences that interlinks students and other academic agents, as well as the need to focus on the different learning experiences that will probably result from the favourable conditions for the emergence of creativity. In this scenario, the polytechnic higher education system is currently facing a set of challenges that should be seized and made the most of. This type of educational system has been historically labelled as an education system with specific characteristics, more focused on practical and vocational higher education. In the case of Portugal, the difference between polytechnic and university education (Assembleia da República, Lei de Bases do Sistema Educativo, Lei 46/86, 14 October) is the fact that the former is more targeted towards practice, while the latter is highly focused on theory. The act of creation implies understanding organisational problems, such as change, efficiency, and survival (Woodman, Sawyer & Griffin, 1993). Furthermore, the dominant research trend in this area has pointed to the development of integrative studies that encompass different scientific fields (Ford, 1996, 2000; Cummings & Oldham, 1997). Besides the issues tied with processes and structures, creativity studies usually deal with the identification of the characteristics of the agents that play an essential role in the process of innovation, trying with that to optimise effectively their interactional patters. Based on this scenario, the present work focused on the case of the Lisbon Polytechnic

Institute (LPI) aiming at describing its creative state from the standpoint of the 8 schools that comprise it. Thus, its overall goal is the identification of which of these schools show the largest creativity indicators according to the 6 Ps model (Runco, 2007). This model focuses particularly on the dimensions of potential and creative development. The following sections identify the research objectives and design, and describe the method used, before presenting and discussing the results.

2. Objectives and design

Pursuant to the previously mentioned goal, the question that underlies this work is *What is the state of creativity in the different schools that comprise the Lisbon Polytechnic Institute according to their creative potential and performance and with a view to developing future efficient innovation strategies?* Deriving from this overall goal, three specific goals were set: 1) Identifying the indicators of creative potential in LPI's schools; 2) Identifying the indicators of creative development in LPI's schools; 3) Identifying the 4 most creative schools within LPI that might constitute case studies pointing to best practices in terms of creativity and innovation. The literature has shown that creativity has a multitude of definitions, conceptualisations, domains, dimensions, and integrates different methods and levels of analysis. Some studies have pointed to the difficulty of studying creativity both due to the operationalization of research and the consistency of the results found (Kozbelt, Beghetto & Runco, 2010). A testament to this is some of the work conducted in the field of the polytechnic higher education system (Piteira, 2016) that has brought to light some related paradoxes — e.g. the awareness of its need coupled with contrary organisational practices. Stemming from these challenges, the work grid used to answer the previously stated research problem adopted the 4 Ps model conceived by Rhodes (1961), and subsequently developed by Simonton (1990) and Runco (2004, 2007a and b). After its development, it currently incorporates 6 Ps and is called *Hierarchical Framework for the Study of Creativity*. This model establishes a hierarchy in which creativity can be studied according to two dimensions: 1) *creative potential*, which includes person (personality traits and characteristics), process (cognition), press (a. distal: evolution, culture; b. immediate: places, setting, environment); and 2) *creative performance*, which includes products (ideas, patents, inventions, and publications), persuasion (historical reputation, systems-individual-field-domain, social attributions), interactions (state X trait; person X environment).

Deriving from this theoretical grid (Rhodes, 1961; Simonton, 1990; Runco, 2004, 2007a and b), three propositions were put forward: **P1.** Creativity in the LPI is encouraged by the existence of significant creative potential in its schools according to the 4 Ps model; **P2.** Creativity in the LPI results from how schools can manage creative performance according to the 4 Ps model; **P3.** The most creative schools of LPI are those with the highest levels of creative potential and performance according to the 4 Ps model. Figure 1 illustrates the proposed research design.In order to describe the creative state of LPI, the abovementioned propositions set aims to map the indicators of creative potential, as well as their subsequent development, and how this has been achieved. By interweaving these indicators, focusing on the actual levels of creative potential and performance, we will be able to identify the most creative schools so as to subsequently develop in-depth case studies to describe the best practices employed in those schools.

3. Method

Since this is an exploratory study that aims to understand the complex issue of creativity in the context of higher education, its methodological background was qualitative, following the case study research method (Yin, 1994; Stake, 1994). Thus, methodologically, the aim of this project was to circumscribe the relevance of meanings, detailing data in specific study situations with the purpose of creating knowledge and encouraging the development of a practice-based theory (Miles & Huberman, 1994; Shaw, 1999). Thus, data collection followed Yin's (1994) recommendations, including using several sources of evidence. Accordingly, we collected data from newspapers, websites, and newsletters regarding the 8 LPI's schools over the 3 months of observation. Subsequently, we conducted exploratory interviews with the people in charge of innovation and entrepreneurship policies and strategies within LPI in order to include the perception of the decision-makers. Subsequently, after analysing and comparing the data collected from these two sources, the current work identified the most creative schools. Data analysis — qualitative and content-driven — followed the recommendations of Bardin (1977). Since the categories had already been defined — deriving from the underlying theoretical model (6 Ps) — a series of criteria were ensured: completeness, representativeness, homogeneity, and relevance regarding the content corpus. In the coding process, the different units of context were defined (interviews and documents from websites/newspapers) and register (sentence, with the concept or idea pointed by the unit of context, i.e. by the source). The present research conducted a co-occurrence analysis as a rule to count units of register and used relative frequencies of occurrence of units of register as the counting method. This process generated categorical and co-occurrence matrices of relative frequencies. This in turn helped us to visualise the

categories highlighted in the cases, isolating the essential determinants in each case study. This analysis was carried out per category in each dimension and context unit (information sources), allowing for the intersection of several co-occurrences in the content analysis. In addition, the MAXQDA (version 12.1.0) software was used to help categorising and reducing data.

The empirical field was comprised of the 8 IPL's schools grouped into 6 scientific fields: i) *Arts*: Lisbon School of Dance, Lisbon School of Music, and Lisbon Theatre and Film School; ii) *Business Science*s: Lisbon Accounting and Business School; iii) *Health Sciences*: Lisbon School of Health Technology; iv) *Engineering*: Lisbon Engineering School; v) *Education*: Lisbon School of Education; and vi) *Communication*: School of Communication and Media Studies. Their corresponding websites were analysed, as well as any newspaper articles that alluded to their creativity. Simultaneously, 6 interviews were conducted, including one with the presidency of LPI and the staff in charge of the different areas (innovation and entrepreneurship, quality, arts). These interviews were also useful to validate the data collected from websites, newsletters, and newspapers.

4. Discussion

The analysis performed allowed us to identify the most creative schools in the case study. Additionally, following a content description, we were able to circumscribe the indicators in the dimensions of creative potential and performance, discussing the different levels of creativity in LPI's schools. Table 1 summarizes the results.

Table 1. Summary of the results: Relative frequencies (RF) of content analysis.

Schools	Websites / Newsletters / Newspapers (2010-17)					Interviews (2017-18)				Total
	Awards / Honourable mentions	Poliempreende: Entrepreneurship Competition	Products/Services...	Creative Schools	Total	Potential	Performance	Creative Schools	Total	
Dance	0.33	0.33	0.33	1.00	0.49	0.13	0.25	0.33	0.23	0.36
Music	0.88	0.13	0.00	2.67	0.48	0.13	0.13	0.33	0.19	0.33
Theatre and Film	1.00	0.00	0.00	5.00	1.50	0.38	0.25	0.33	0.32	0.91
Accounting and BS	0.38	0.63	0.00	2.67	0.92	0.13	0.13	0.00	0.13	0.52
Health Technology	0.20	0.70	0.10	3.32	1.08	0.38	0.25	0.17	0.26	0.67
Engineering	0.47	0.20	0.33	5.00	1.50	0.50	0.63	0.67	0.33	0.91
Education	0.67	0.33	0	1.00	0.50	0.25	0.25	0.33	0.27	0.38
Communication and MS	0.76	0.24	0.00	5.67	1.66	0.25	0.50	0.67	0.47	1.06

In accordance with the proposed theoretical model — and as far as **proposition 1**, whose purpose was describing creative potential, is concerned — the interviewees identified the following indicators: how creative feats are reported, the establishment of partnerships, the development of products/projects targeted at the community and collaborative projects, the capacity for schools to work together profiting from the diversity and complementarity of skills, internationalisation strategies, quality teaching staff composed of doctoral faculty working exclusively in these schools, attracting quality students, syllabuses that promote the development of creative skills, and focusing on applied knowledge. These indicators corroborate the 6Ps model (Runco, 2004, 2007a and b): the importance of people (students and faculty); focusing on developing new products, services and projects; and the relevance of environmental/contextual/pressure issues, e.g. the need for internationalisation and partnerships. Thus, and according to the decision-makers' perception, the schools with the highest creative potential were Lisbon Engineering School (RF: 0.50), Lisbon Theatre and Film School (RF: 0.38), and Lisbon School of Health Technology (RF: 0.38).

Proposition 2, which discusses creativity linked to performance, via products, persuasion and reputation, and interactions (Runco, 2004, 2007a and b) — the most visible aspect of creativity — was the most mentioned by every source. In the case of newspapers and websites, the most evident indicators were products, processes, services, systems and projects considered innovative applied to society and communicated outside LPI, both on a commercial and on a social level. Additionally, awards, honourable mentions, and the acknowledgement of the schools' innovative feats were highly mentioned, as well as projects with business potential that students entered in the Poliempreende competition, an entrepreneurship competition exclusively targeted at LPI's students. There is strong concern to ensure that the outputs of the schools' creative performance are disclosed, featuring in several newspaper articles about the new things

developed and commercialised by LPI's schools, something that also came up often in the interviews conducted. The flagship products developed by Lisbon Engineering School (RF: 0.63) were the most prominent, followed by the School of Communication and Media Studies (RF: 0.50), and with more average values Lisbon Theatre and Film School, Lisbon School of Health Technology, Lisbon School of Education, and Lisbon School of Dance (RF: 0.25).

In order to answer **proposition 3**, and taking into consideration the indicators of creative potential and performance, the current work tried to identify the most creative schools highlighting the levels of creativity transformed into successful products, services, and projects and effectively disseminated. From this analysis, newspapers and websites highlighted the School of Communication and Media Studies (RF: 5.67), Lisbon Engineering School, and Lisbon Theatre and Film School (RF: 5.00), also indicating Lisbon School of Health Technology (RF: 3.32). The general score that includes all the (sub)categories and indicators from this source indicate the School of Communication and Media Studies as the most creative one (RF: 1.66), followed by Lisbon Engineering School, and Lisbon Theatre and Film School (RF: 1.50), with particular emphasis on Lisbon School of Health Technology that has a score of 1.08 (RF). Regarding the perception of the decision-makers, data were not very dispersed, since they all agree that the most creative schools are the School of Communication and Media Studies and Lisbon Engineering School (RF: 5.67). Taking into consideration every (sub)category and indicator mentioned by this source, the schools with the highest relative frequency scores are the School of Communication and Media Studies (RF: 0.47), Lisbon Engineering School (RF: 0.33), and Lisbon Theatre and Film School (RF: 0.33). Lisbon School of Education is also worth mentioning, with the 4th highest score (RF: 0.27). In sum, by triangulating all the sources (newspapers, websites, and interviews), the scores that indicate the general levels of creativity point to the School of Communication and Media Studies (RF: 1.06) as the most creative one, closely followed by Lisbon Engineering School and Lisbon Theatre and Film School (RF: 0.91). However, according to the data, one must call attention to the emergence of Lisbon School of Health Technology, which ranked 3rd on this item (RF: 0.67) and in the future might constitute a case study on the development of new products, applied scientific knowledge, as well as inter-school relations via the complementarity of skills (e.g. with engineering). Briefly, and thinking about the in-depth case studies that will be developed in the future, we provide some of the characteristics that distinguish each of the 3 schools that were considered the most creative ones within LPI:

School of Communication and Media Studies: Targeted at providing services to the community. This is the most prominent example in terms of being able to excel in communicating its accomplishment. Everything that wins gets published. It is the youngest in the group in terms of the date of its creation, but it is also the one that shows more dynamism both in terms of the innovative educational offer, its faculty, and students themselves. It responds to external demands and service orders. Students develop projects based on what they learn in class. E2, RTP 2's TV channel — the Portuguese public broadcasting company — is mentioned as a product of excellence. It is one of the schools with the strongest social influence on the external community. **Lisbon Engineering School:** Focused on applied knowledge and development of new products in a wide range of scientific fields (electronics, mechanics, chemistry…). One must highlight initiatives such as Poytech ID, considered the main driver of innovation within LPI and originated in this school. It can boast a large portfolio of new applied science products, e.g. the first ever ATM, the first card pin pad, *via verde* operated by Brisa (the first electronic toll antennas), *fórmula student*. It has a vast know how in terms of transference of knowledge into products and services. The fact that it works closely with Lisbon School of Health Technology is pointed as a success factor for the complementarity of skills between schools. **Lisbon Theatre and Film School:** Focused on projects associated with products. There is a huge creative potential in its student base and faculty. Since students chose the school as their first option in terms of higher education, their quality is very high (on average 200 candidates for 25 vacancies). The film school is the most mentioned one. Maybe because it operates in the artistic area, this is one of LPI's most creative schools and it has developed some remarkable products connected with specific projects (e.g. Bad Behavior's terror films).

5. Conclusion

Research on creativity is always a major challenge. This work has not been an exception, mostly because it was carried out in an empirical field that is even harder to study: the public polytechnic education system. This type of educational system is highly hindered by the bureaucratic barriers that characterise it and by the lack of resources that affects the sector of education and has increased in the past few years due to the financial crisis. Consequently, creativity is also constrained by these variables. However, the data demonstrated that although LPI and its schools operate in the public sphere, they have made much effort to uphold their levels of creativity in terms of potential and performance. This has contributed to its innovation in terms of new products and services that have been developed, the construction of a good reputation of

these schools, strong links to the outside community, and the capacity to adapt and manage change. This was seen in the description of the creative indicators related with the potential and performance of the IPL's schools that the results show as the most creative ones. We can say that although there is still a long path to travel, the seed of innovation, via creativity, has been sowed in the group of schools that comprise the LPI. Starting from the dissemination of the best that is being produced, in turn, is way to encourage the development of strategies to make more and better in this complex area of action that is the public higher education system. The vision above shows creativity based on the perception of decision-makers and the external image constructed by the schools. This is one of the limitations of the present work. Going beyond the perception of the schools' governing bodies and marketing strategies is the next step in this series of studies. The dimension that mediated the results was the capacity that schools have to communicate the outputs of their performance (in newspapers, newsletters, and websites), which distinguished them as creative. Being an important variable in the theoretical model (persuading others that you are creative), however, is not the only determinant. Thus, in the future, a series of case studies will be conducted to further develop other variables and dimensions of the 6 Ps Model, integrating not only the perception of decision-makers but also of all the other stakeholders of these schools: operational agents, students, and faculty. The study of creativity in public higher education still has a long way to go, where social, political and economic dimensions are ever more complex. Therefore in-depth case studies that describe best practices are welcome and will serve as an important roadmap to navigate in this intricate labyrinth.

References

Assembleia da República (1986). Lei de Bases do Sistema Educativo, Lei 46/86, de 14 de Outubro. *Diário da República*, *I Série*(237), 3067-3081.

Cummings, A. & Oldham, G. 1997. Enhancing Creativity: Managing Work Contexts for The High Potential Employee. *California Management Review, 40*(1), 22-38.

Ford, C. 1996. A Theory of Individual Creative Action in Multiple Social Domains. *Academy of Management Review, 21*(4), 1112-1142.

Gaspar, D., Mabic, M. (2015). Creativity in higher education. *Universal Journal of Educational Research 3*(9), 598-605.

Kozbelt, A.; Beghetto, R. & Runco, M. (2010). Theories of Creativity. In R. J. Kaufman & R. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (Pp. 20-47). New York: Cambridge University Press.

Miles, M., & Huberman, M. (1994), *Qualitative Data Analysis.* Thousand Oaks, Ca: Sage Publications.

Piteira, M. 2016. Is School a Serial Killer or Is Creativity a Redemption Angel?: The Case of Creativity at Public Higher Education. In A. Goel (Ed.), *Values: an Organizational Resource* (Pp. 220-230). Shreveport, LA: ISSWOV - International Society for Study of Work and Organizational Values. ISBN 978-0-9817997-4-2.

Rhodes, M. (1961). An analysis of creativity. *Phi Delta Kappan*, 42, 305-310.

Runco, M. A. (2004). Everyone has creative potential. In R. J. Sternberg, E. L. Grigorenko, & J. L. Singer (Eds.), *Creativity: From potential to realization* (Pp. 2-30). Washington, DC: American Psychological Association.

Runco, M. A. (2007a) *A hierarchical framework for the study of creativity*. New Horizons in Education, 55(3), 1-9.

Runco, M. A. (2007b). *Creativity: Theories and themes: Research, development, and practice*. New York: Academic Press.

Shaw, I. (1999). *Qualitative Evaluation.* London: Sage Publications.

Stake, R. (1994). Case studies. In N.K. Denzin, & Y.S. Lincoln (Eds.), *Handbook of Qualitative Research* (Pp. 236247). Thousand Oaks, CA: Sage.

Woodman, R.; Sawyer, J. & Griffin, R. 1993. Toward a Theory of Organizational Creativity. *Academy of Management Review*, *18*(2), 293-321.

Yin, R. (1994). *Case study research. Design and methods*. London: Sage.

THE DIFFERENT EFFECTS OF VOLUNTARY AND INVOLUNTARY ACTIVITIES ON POSITIVE AFFECT: FLOW AS A MODERATOR

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Abstract

Previous studies have shown that voluntary activity was related to positive affect. Voluntary activities make people feel more positive compared to the involuntary activities. Flow is the optimal subjective experience people feel when they are engaged in balanced activity between skill and challenge. The more people experience flow, the more likely people become spontaneous and feel positive. The study was aimed to examine the different effects of voluntary and involuntary activities on their positive affect and also to explore the moderating effect of flow. Eleven graduate students participated in the systematic phenomenological method: the Experience Sampling Method (ESM). The application PACO(Personal Analytics Companion), named and developed by Google in 2010, was used to collect ESM data. 538 response-level data were collected and standardized (Z-scored). 196 of 538 response-level data, in response to a question asking for the spontaneity of their activities, were analyzed. The PROCESS macro was used for the analysis of the moderation effect of flow. The results of the study showed that voluntary activities make graduate students feel more positive than involuntary. The moderating effect of flow between voluntariness of activity and positive affect was significant. At low flow level, people felt negative in both voluntary and involuntary activities. At the middle flow level, people felt negative in involuntary activities, while they felt positive in voluntary activities. At the higher flow level, people felt positive in both voluntary and involuntary activities. These results suggest that flow interacts with the voluntariness of activity in deciding whether people feel positive. The implication of the results in education will be discussed.

Keywords: Experience sampling method (ESM), voluntariness, positive affect, flow, PACO.

1. Introduction

Well-being is what everyone wants (Diener, 1984). Wellness is composed of two major parts. One is mental well-being and the other is physical well-being. Mental well-being is similar to positive affect. Studies of positive affect is important, because study has suggested that positive affect have a lot to do with health (Pressman & Cohen, 2005). Therefore, this study was conducted to explore the variables that affect positive emotions. Many studies on the relationship between voluntariness and positive affect have been conducted. When the spontaneity is satisfied, the positive emotion increases (Patrick, Skinner & Connell, 1993; Ryan & Connell, 1989). It is difficult to feel positive emotion in involuntary behavior. What can the variable make people feel positive in involuntary behavior?

Flow and happiness have been studied extensively (Csikszentmihalyi & Wong, 2014, Hull, Williams, & Griffiths, 2013, Tsaur, Yen, & Hsiao, 2013). According these studies, the flow experience has to do with happiness. Specifically, people who have experienced high flow experiences are more likely to be happier. It is necessary to examine whether the relationship between happiness and voluntary or involuntary behavior depends on flow experience. The study conducted by experience sampling method (ESM) was aimed to examine the different effects of voluntary and involuntary activities on their positive affect and also to explore the moderating effect of flow.

2. Methods

ESM is a method to send 8 random signals a day. Participants responded to the questionnaire when each signal is ringing. In this pilot study, data were collected using the application PACO (Personal Analytics Companion) developed by Google. 11 graduate students voluntarily participated in the study. 5 males and 6 females are participated in the study and the average age of subjects was 33.5 years. Of the 538 responses, only 196 responses to the question asking for the spontaneity of their activities were analyzed.

Whether the respondent perceived the activity as an obligation or a voluntary was indicated by the question "Why were you doing this activity?". It was assumed that participants who checked "I wanted to do it" perceived their activity as a voluntary activity; while those who selected "I had to do it" perceived their activity as an involuntary activity. In order to measure the flow experience, the items were composed based on the previous study (Lee & Choi, 2011). The question asked, "How well did you focused on that activity?" And "Was you worried about how other people look at me?", "Do you feel that you can proceed as you like?", "Was that activity fun?". Positive affect was measured by the questions which contains 12 items (interesting, exciting, uneasy, passionate, proud, happy, sad, lonely, committed, clear, competitive, and comfortable).

The scores of flow experience and positive affect were standardized (Z-scored) by subtracting the individual's overall mean on that variable and ten dividing by the individual's standard deviation on that variable. The PROCESS macro was used for the analysis of the moderation effect of flow.

3. Result

The results of the study showed that voluntary (M=0.39, SD=0.86) activities make graduate students feel more positive than involuntary (M=-0.49, SD=0.79) activities (t=7.12, p<.001). The moderating effect of flow between voluntariness of activity and positive affect was significant (t=2.18, p<.05). At low flow level, people felt negative in both voluntary (M=-0.72) and involuntary activities (M=-0.82). The difference between voluntary and involuntary activities was not significant (t=0.78, p>.05). At the middle flow level, people felt negative in involuntary activities (M=-0.23), while they felt positive in voluntary activities (M=0.07). The difference between voluntary and involuntary activities was significant (t=3.28, p<.01). At the higher flow level, people felt positive in both voluntary (M=0.86) and involuntary activities (M=0.37). The difference between voluntary and involuntary activities was not significant (t=3.84, p<.001).

4. Conclusion and discussion

These results suggest that flow interacts with the voluntariness of activity in deciding whether people feel positive. Csikszentmihalyi and Wong (2014) said that students who frequently experience positive emotion will take more voluntary actions than students who do not frequently experience happiness. The results of this study also suggest that voluntary behaviors are more positive than mandatory ones. The difference from the study in 2014 is that in this study, spontaneous behavior was not positive at the low level of flow experience. At high flow experience levels, involuntary behavior was positive. This suggests that the voluntariness or involuntariness of the activity is important to happiness, but flow experience can make involuntary activities positive. Also, the result suggested that the perception of activities can change by flow experience. The implication of the results in education will be discussed.

References

Csikszentmihalyi, M., & Wong, M. M. H. (2014). The Situational and Personal Correlates of Happiness: A Cross-national Comparison Flow and the Foundations of Positive Psychology.
Diener, E. (1984). Subjective well-being. Psychological Bulletin, 95 , 542-575.
Hayes, A. F.(2012). PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling, From http://www.afhayes.com/public/process2012.pdf
Hull, D. C., Williams, G. A., & Griffiths, M. D. (2013). Video game characteristics, happiness and flow as predictors of addiction among video game players: a pilot study. *Journal of behavioral addictions, 2*(3), 145-152.

Lee, H. J., & Choi, I. S. (2011). A study for quality of life in musically talented students using experience sampling method. *Journal of Gifted/Talented Education, 21*(1), 57-81.

Patrick, B. C., Skinner, E. A., & Connell, J. P. (1993). What motivates children's behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and social Psychology, 65*(4), 781-791.

Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health?. *Psychological bulletin, 131*(6), 925-971.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of personality and social psychology, 57*(5), 749-761.

Tsaur, S. H., Yen, C. H., & Hsiao, S. L. (2013). Transcendent experience, flow and happiness for mountain climbers. *International Journal of Tourism Research, 15*(4), 360-374.

SOCIO-CULTURAL EXPERIENCES OF INTERNATIONAL STUDENTS IN IRELAND AND THE IMPACT THESE EXPERIENCES HAVE ON THEIR SELF IDENTITY

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Abstract

This paper was designed and carried out in order to examine the socio cultural experiences of international students in higher education in Ireland. The investigation examined the impact of these experiences on a set of key relationships connected with these students' concepts of self-identity and sense of self (Giddens, 1991). Giddens (1991) theory on reflective self-identity underpinned the theoretical approach to this research. This study was qualitative in nature and a multi site case (Merriam, 1998) was the approach that was taken to best answer the research questions. At the time of publication, it was the only study in Ireland to consider international students in numerous campuses. Focus groups and semi structured interviews were used. The sample of forty seven international students representing twenty six different nationalities who took part in this study were registered in a range of disciplines at both undergraduate and postgraduate level. The attention of this paper is the self identity of the students. This research found that the experiences in Ireland were an integral part in the lives of these students which resulted in an exposure to new opinions, ideas and experiences feeding into the reflexive project of the self.

Keywords: Socio-cultural, experiences, international, students, self-identity.

1. Introduction

This paper presents research that was carried out for my PhD (2017) thesis. My thesis was designed and carried out in order to examine the socio cultural experiences of international students in diverse settings in higher education in Ireland.

The key findings of my research related to five main themes (1) the transition of the students from their home to Ireland; (2) the many challenges that they faced; (3) the relationships that contributed to their experiences in Ireland; and (4) the community support for international students in Ireland. It is the purpose of this report to focus on the contribution that these experiences have had on their identity.

2. Objectives

The key aims and objectives of the study were to investigate the socio-cultural experiences international students have while studying in higher education in Ireland. The study also set out to assess the impact these experiences have on their identities, their sense of self and their relationships with family and others. It was also my intention to explore any traceable change in the identities of international students as they experience a new socio-cultural environment in Ireland. While addressing these objectives the purpose was then to inform institutional and nationwide policy on the supports for international students in higher education in Ireland.

3. International students profile in Ireland

Data from 2011/2012 indicate there were 32,000 international students in participating Irish higher education institutions and they came from 170 countries (EI, 2012). This represents an increase of two percent since 2009/10. Ireland has a growth target of 33% in the HE sector which will result in an increase in international students to approximately 44,000 by the end of the 2019/2020 academic year (PIE, 2018).

Seventy percent (70%) of international students are studying at university level in Ireland. 16% are studying in Institutes of Technology (IoTs) and 13% in private colleges with the remaining 1% based

in other state aided colleges. International students in Ireland are registered in a range of course levels; the majority are studying at level eight (75%) and at level nine (4%). There has been an increase of 35% over 2010 and 2011 of international students at PhD level in Ireland and, at 20% of the total PhD population in Ireland, this is considered high by international standards (EI, 2012). Medicine, business and humanities subjects are most attractive for international students in Ireland. The financial contribution of international students to Irish Higher Education Authority (HEA) funded Universities and Institutions of Technology (IOT) and privately-funded Higher Education Institutions (HEI) was approximately €217m in 2014/2015. This does not include figures for travel, coming in and out of the country or the money that relatives spend when visiting Ireland. In total, international students and their visiting relatives are estimated to generate revenue of up to €1.5 billion per year for the Irish economy with a target set of growth to €2.1bn by the year 2020 (Department of Education and Skills, 2016).

4. Methodology

The approach taken for this research was purely qualitative in nature. It was a multi site case study (Merriam, 1998) with a sample frame that was constructed in order to ensure representation from the spectrum of higher education institutions in Ireland. Two universities, two private colleges and an institution of technology comprised the frame.

The sample was designed to include international students' representative of the disciplines and diverse origins of third level international students in Irish higher education. Purposive sampling (Cohen and Morrison, 2011; Punch, 2009) was conducted, where the characteristics pertinent and applicable to this research include international students enrolled in full time third level education in Ireland. Forty seven students representing twenty six different nationalities participated in this research.

All participants were enrolled in full time higher education at undergraduate and postgraduate courses ranging from business, marketing, information technology, psychology, science and finance.

Focus groups were conducted as the initial phase in the design of this study to capture the ideas of international students in a group setting and to generate data and themes for the later interviews. Following the focus groups, in-depth interviews were conducted with some of the participants and this allowed me to gain a deeper insight into the experiences of the participant's on a one to one basis. This was important to gain germane information on the participant's experiences that they may not have been willing to share in the focus groups.

The analysis of data was approached and analysed thematically and using an interpretative phenomenological analysis (IPA) stance (Smith, Flowers & Osborn, 1997; Smith & Osborn, 2003; Brocki & Weardon, 2006).

5 Discussion

5.1. Challenges for International Students

As international students embark on their educational experience in a new country they face a newness and diversity (Walker, 2002; Lumby & Foskett, 2015; Mayuzumi, Motobayashi, Nagayama, & Takeuchi, 2007) that may pose challenging for some. These challenges can vary in complexity from 'simple' paper work to language proficiency and may cause apprehension (Rajab, Wahab, Shaari, Panatik, & Mohd Nor,2014; Wang & Mallinkrodt, 2006; Poyrazli & Lopez, 2007; Yeh & Inose 2003; Brown & Brown, 2012; O'Reilly, Hickey & Ryan, 2013). Other challenges facing international students are numerous, ranging from language and culture issues to finances, friendship, housing and racial tensions (Trice, 2003; O'Reilly, Hickey, & Ryan, 2013; Brown & Brown, 2012; Phakiti, Hirsh, & Woodrow, 2013; Ezra, 2003; Wang & Mallinckrodt, 2006; Senyshyn, Warford, & Zhan, 2000; Ying & Han, 2008; Marginson, Nyland, Sawir, & Forbes-Mewett, 2010). Such newness and adventure in a new country can intrigue yet also shock and contribute negatively to the experiences of international students (Brown & Aktas, 2011; Gu, Schweisfurth & Day 2010; Wu & Hammond, 2011; Brown & Brown, 2012). Cultural shock and homesickness can also contribute to feelings of stress and anxiety (O'Reilly et al., 2013). Such consequences can result in a full departure from their new system. However, it has to be noted that should international students embrace their new culture and overcome the stress of the transitional period they can become more culturally aware. In my research I found that in general once the international students had experienced the transition, and had overcome the challenges, it seemed that the student as a whole established and sustained a changed and more informed self-identity (Giddens, 1991; Goffman, 1990; Brunton, 2008; Ashforth, 2001; Gu, Schweisfurth, & Day, 2010).

5.2 Experiences faced and Self–Identity of International Students

This research strived to look at the experiences that may have influenced the self-identify of the international student in Ireland. The reflective narrative of the student in the backdrop of a changing

environment sets the scene for this research. This study has shown that international students not only reflect on events, occurrences, challenges and difficulties, but reflect on how these experiences can contribute to their changing self-identity. There are elements of identity that remains constant and formed (Giddens, 1991), but other aspects of the person are fluid and change based on their experiences, relationships and memberships with social groups. The self-identity of the participants in this study did change and were constantly active in development and reviewing of themselves critically. For example a male Muslim claimed:

> Abdul: *you think about it a bit and I did, you know you are here and you are quite young so you think a lot of 'Where am I going?' you compare yourself with all around you*

As a result of these students taking a risk and choosing to leave their protective surroundings they embark on a journey of self-discovery, the decision for some to travel to Ireland was difficult as they faced separation from their loved ones and away from the security of their home. Another male Muslim found it particularly challenging when he was first away from his home:

> Michael*: Absolutely different. When I came to Ireland I thought it was eh…like you can't compare you know, it's completely different, utterly different. I thought that "How I'm gonna manage?"*

Traditions and ways of life which have provided a social and cultural anchor is core to the constant in the individual. Now in Ireland, international students are faced with a new culture, their security is upset and they are forced to negotiate a new way of living. Although traditions can create boundaries, trust and security, these inherent characteristics can also provide an individual with cues to help an individual break with traditions and benefit when negotiating their new environment. Julie a female student identified with this saying *it is a cultural thing I learn something new every day in Ireland*

Once the stress of the transition was negotiated, this study shows that the international students in this cohort actively shaped new identities and ways of being. The participants in this study seem to grow in maturity, independence and more open mindedness, displaying the characteristics of strong, hard-working individuals who succeed in the face of adversity. This trajectory was due to the experiences here in Ireland, the relationships they were exposed to and the challenges they faced.

Sam, a male student from Mauritius found this to be pertinent to his situation *I was like a prince or a King I never cook or clean ...in Ireland I clean the toilet, I clean the house, I do the food, everything*.

The experiences were not all positive but even in the circumstances of negative experiences many students claimed they also learned from these instances and as they renegotiated outside the comfort of their traditional security and eventually experience a new sense of freedom. Through negotiating experiences (both positive and negative), re-negotiating, and reflective learning can lead to emancipation (Giddens, 1991). This can be found with May's claim, a female student; *I am from a Muslim country. There are things that we are restricted in doing as a female…..here I free*

The socio cultural experiences and relationships in Ireland provide the participants with a whole new concept of thinking and doing for themselves, a freedom to express who they are, through different lenses. The international students in this study experienced emancipation of opinions, ideas and feelings that armed them with the ability to concur 'wider situations' with liberation of sometimes reported oppressive views and ideas. Their experiences also opened their eyes to how their culture differs to other. For example, Drew an American student said, *living far away you kind of reinvent yourself socially and culturally it's a good exercise of character building*

These developments seem to make the students stronger as they mastered these different experiences and explored their ability to meet the challenges faced. Many of these participants made a strong commitment to themselves as international students, commitment to their future both academically and professionally. Fundamental to the narrative of the self-identity is the ability to successfully adapt a feeling of pride in the shaping of their self-identity. Mastering new situations generates feelings of pride and ontological confidence and offers security for individuals. The participants may have felt threatened when they experienced something new and challenging in new surroundings but as they mastered their new environment the participants gained security and pride in the process.

6. Conclusion

In conclusion the socio-cultural experiences and relationships had an impact on the self identity of students coming to Ireland. At each stage of their journey, from the decision to come, the transition, the many challenges as well as relationships and community support collectively impacted the changing sense of self of the international students. Giddens (1991) was particularly well used in this data considering the link between his contribution to the globalisation debate and the nature of travel in international students. His theory on reflexivity of self-identity is particularly fitting to the participants of this study because international students are more likely to be more rationally reflective and contemplative in negotiating their new context.

References

Ashforth, B. E. (2001). *Role transitions in organizational life: an identity-based perspective*. Mahwah, N.J.; London: Lawrence Erlbaum Associates.

Brocki, J. M., & Wearden, A. J. (2006). A critical evaluation of the use of interpretative phenomenological analysis (IPA) in health psychology.*Psychology and health, 21*(1), 87-108.

Brooks, R. (2007). Friends, peers and higher education. *British Journal of Sociology of Education, 28*(6), 693-707

Brown, L., & Aktas, G. (2011). Fear of the unknown: A pre-departure qualitative study of Turkish international students. *British Journal of Guidance & Counselling, 39*(4), 339-355.

Brown, J., & Brown, L. (2012). The international student sojourn, identity conflict and threats to well-being. *British Journal of Guidance & Counselling, 41*(4), 395-413. doi:10.1080/03069885.2012.729026

Brunton, J. (2008). *Identity-portfolio-management: a data-led research study of organisational entrant engagement in processes of identity-creation and identity management*. Dublin City University: PhD.

Cohen, L. M. L. & Morrison, K.(2011) Research Methods in Education: London: Routledge.

Department of Education Skills (2016) Irish Educated. Globally Connected. An International Education Strategy for Ireland. 2016-2020 Retrieved from doe: http://www.educationinireland.com/en/Publications/International-Education-Strategy-2016_2020.pdf

Ezra, R. (2003). Culture, Language and Personality in the Context of the Internationally Mobile Child. *Journal of Research in International Education, 2*(2), 123-149.

International Education, I. o., & (IIE). (2014). Open Doors Data. Special Reports: Economic Impact of International students

Giddens, A. (1991). *Modernity and self-identity*. Cambridge: Polity

Goffman, E. (1990). *The presentation of self in everyday life*. London: Penguin.

Gu, Q., Schweisfurth, M., & Day, C. (2010). Learning and growing in a 'foreign' context: intercultural experiences of international students. *Compare: A Journal of Comparative and International Education, 40*(1), 7-23. doi:10.1080/03057920903115983

International Education, I. o., & (IIE). (2014). Open Doors Data. Special Reports: Economic Impact of International students

Ireland, Education (EI). (2012). International Students in Irish Higher Education 2011-2012. Dublin.

Kennedy, K (2018) Oman & Ireland sign MoU on higher education. *The PIE News* https://thepienews.com/news/oman-ireland-mou/

Lumby, J., & Foskett, N. (2015). Internationalization and Culture in Higher Education. *Educational Management Administration & Leadership, 44*(1), 95-111.

Marginson, S., Nyland, C., Sawir, E., & Forbes-Mewett, H. (2010). International student security. *Cambridge: Cambridge*.

Mayuzumi, K., Motobayashi, K., Nagayama, C., & Takeuchi, M. (2007). Transforming diversity in Canadian higher education: A dialogue of Japanese women graduate students. *Teaching in Higher Education, 12*(5-6), 581-592.

Mazzarol, T., & Soutar, G. N. (2002). "Push-pull" factors influencing international student destination choice. *International Journal of Educational Management, 16*(2), 82-90

Merriam, S. B. (1998). *Qualitative Research and Case Study Applications in Education. Revised and Expanded from" Case Study Research in Education."*: ERIC

O'Reilly, A., Hickey, T., & Ryan, D. (2013). Higher education professionals' perspectives on international student experiences of life and learning in Ireland: a qualitative study. *Irish Educational Studies, 32*(3), 355-375. doi:10.1080/03323315.2013.826334

Oxford Economics (2017) *International students now worth £25 billion to UK economy* Retrieved from doi:http://www.universitiesuk.ac.uk/news/Pages/International-students-now-worth-25-billion-to-UK-economy---new-research.aspx

Phakiti, A., Hirsh, D., & Woodrow, L. (2013). It's not only English: Effects of other individual factors on English language learning and academic learning of ESL international students in Australia. *Journal of Research in International Education, 12*(3), 239-258.

Poyrazli, S., & Lopez, M. D. (2007). An Exploratory Study of Perceived Discrimination and Homesickness: A Comparison of International Students and American Students. *The Journal of Psychology, 141*(3), 263-280. doi:10.3200/JRLP.141.3.263-280

Punch, K. F. (2009). *Introduction to Research Methods in Education*. London: Sage.

Rajab, A., Wahab, S. R. A., Shaari, R., Panatik, S. A., & and Mohd Nor, F. (2014). Academic and Social Adjustment of International Undergraduates: A Quantitative Approach, (pp. 247-250). *Journal of Economics, Business and Management*

Senyshyn, R. M., Warford, M. K., & Zhan, J. (2000). Issues of adjustment to higher education: international students' perspectives. *International Education, 30*(1), 17-35.

Smith, J. A., Flowers, P., & Osborn, M. (1997). Interpretative phenomenological analysis and the psychology of health and illness. *Material discourses of health and illness*, 68-91

Smith, J. A., & Osborn, M. (2003). Interpretative phenomenological analysis JA Smith (Ed.) Qualitative Psychology A Practical Guide to Research Methods: London: Sage Publications.

Trice, A. G. (2003). Faculty Perceptions of Graduate International Students: The Benefits and Challenges. *Journal of Studies in International Education, 7*(4), 379-403.

Walker, G. (2002). The language of international education. *International Education in practice: Dimensions for national and international schools. Kogan Page, London*

Wang, C.-C. D. C., & Mallinckrodt, B. (2006). Acculturation, attachment, and psychosocial adjustment of Chinese/Taiwanese international students. *Journal of Counseling Psychology, 53*(4), 422-433. doi:10.1037/0022-0167.53.4.422

Wu, W., & Hammond, M. (2011). Challenges of university adjustment in the UK: a study of East Asian Master's degree students. *Journal of Further and Higher Education, 35*(3), 423-438. doi:10.1080/0309877X.2011.569016

Yeh, C. J., & Inose, M. (2003). International students reported English fluency, social support satisfaction, and social connectedness as predictors of acculturative stress. *Counselling Psychology Quarterly, 16*(1), 15

Ying, Y.-W., & Han, M. (2008). Variation in the Prediction of Cross-Cultural Adjustment by Ethnic Density: A Longitudinal Study of Taiwanese Students in the United States. *College Student Journal, 42*(4), 1075-1086.

COMPARISON OF SINGAPORE, JAPAN, ESTONIA AND TURKEY BASED ON EDUCATIONAL LEADERSHIP AND SCHOOL GOVERNANCE ACCORDING TO PISA 2015

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Abstract

Evaluating the success of the school systems every three years, PISA is a wide-ranged research program. In addition, one of the subjects PISA focuses on is why some countries have a high success rate while some aren't successful enough. In this context, this study aims to compare Turkey's educational leadership and school governance with the countries whose science scores are the highest. The countries with the highest science success rate, compared to Turkey, are Singapore, Japan and Estonia. Correlational research has been used, and the surveys given to the school principals by PISA have been taken into consideration. Four indicators have been applied to educational leadership level. In the educational leadership context, principals' curriculum leadership, instructional leadership, professional leadership and the teachers' participation in school development have been compared in these four countries. On the school governance level, principals' views on principals, teachers, school governing board, local or regional education authority and national education authority have been taken into account. These subjects compare the responsibilities of the countries in the context of school governance according to resources, curriculum, establishment of student disciplinary policies, establishment of student assessment policies, and approval of students for admission to school. The comparison has been made on the ratio of principals who claim on the educational leadership surveys, to have been a leader at least once a month. According to this, excluding Japan, the items in which principals in Turkey show leadership less than those in Estonia and Singapore are "ensuring that the occupational development of teachers complies with the school's objectives", and "discussing school's academic goals with teachers during teachers' board meetings". The results based on the principals' views on school governance are as follows: Turkey has the lowest rate in use of resources, curriculum, establishing student disciplinary policies, establishing student assessment policies, approving students for admission to the school, as the main responsibilities of principals. Turkey has lower school governance compared to the three most successful countries. The presented PISA data have been compared with the findings in the literature. The results found in the study are expected to improve the school administration, to contribute to the preparation and occupational development of school leaders, and to establish a basis for the educational policies in Turkey.

Keywords: Educational leadership, school governance, PISA, Turkey, school management.

PROMOTION OF ENTREPRENEURSHIP EDUCATION IN SOUTHEAST ASIA

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Abstract

The onset of globalization and increased regional economic integration has presented new challenges as well as opportunities for SMEs in Southeast Asia. Entrepreneurship and entrepreneurship education are two discussed topics in the past few years promoted in all the national and Southeast Asian educational and political reform strategies. Teaching entrepreneurship is a challenge for most of the professors from non-business faculties, where the development of soft skills should be combined with a proactive approach of changing mindsets and attitudes. Entrepreneurship programmes, including advisory and outreach services, should be expanded to equip owners of SMEs with new and improved management and business practices and methods in production, quality improvement, marketing and distribution to raise productivity, efficiency and profitability as well as to commercialize and market innovative ideas. Using Assessment Framework for Promotion of Entrepreneurial Education, this paper systematically reviews empirical evidence on the promotion of entrepreneurship education in 5 selected Southeast Asian countries, namely, Indonesia, Malaysia, Philippines, Singapore, and Thailand, analysing published articles from 2007-2017. This paper also analyses entrepreneurship education and the development of entrepreneurial competencies of young people in the economic and social context of the 21st century.

Keywords: Entrepreneurship education, higher education, Southeast Asia.

1. Introduction

Entrepreneurship has been viewed as a critical contributor in fostering economic growth and development (Singer et al., 2015). Accordingly, entrepreneurship education (EE) programmes and research have expanded significantly in the USA and Europe over the past few decades (Matlay, 2008; Packham et al., 2010). As Nabi et al. (2017) note, this growing trend suggests that exposure to certain types and levels of EE may benefit students in their acquisition of knowledge and skills as well as in the increasing intentions toward entrepreneurship. Indeed, literature shows that EE has played a key role in pursuing entrepreneurial initiatives to provide a highly qualified entrepreneurial workforce for society (Rasmussen and Sørheim, 2006) and in facilitating students to become sole traders and owners of micro-businesses (Matlay, 2008). Consequently, in the field of entrepreneurship, EE becomes significant to both society and the individual.

Similarly, to western countries, the entrepreneurial activities have flourished and gained growing interests in SouthEast Asian countries because the impacts of entrepreneurship including job growth, innovation, and internationalization are related to economic development (Singer et al., 2015). According to 2014 Global Entrepreneurship Monitor global report (Singer et al., 2015), the percentages of the population (18-64 years old) involved in entrepreneurial employee activity (EEA) in Indonesia has increased their EEA from approximately 0.5 percent to 0.7 percent. In addition, as a response to the challenges of globalization, entrepreneurship in Malaysia is significantly considered to expand economic growth and to sustain competitiveness (Arokiasamy, 2012). Indeed, higher education institutions (HEIs) in Malaysia (Arokiasamy, 2012) have increasingly offered their entrepreneurship-related programmes and courses as a response to society's increasing demands.

In this review paper, an effort has been made to conceptualize, the term entrepreneurship education? How it came into an action? Its nature, the new role to be played by teachers for promotion of entrepreneurship education, followed by its promotion among the Southeast Asia countries. Over the past two decades, Southeast Asia has seen a new breed of entrepreneur – along with improved education, technology development and better government investment.

2. Entrepreneurship education: concept and meaning

By reviewing the existing literature, conflicting sides of entrepreneurship schools of thoughts, and an inherent lack of a common definition of entrepreneurship has been found (Sexton and Bowman, 1984). A debate was noticed in the application of terms like entrepreneurship education versus enterprise education (Garavan and O'Cinneide, 1994) also a substitution of entrepreneurship education with entrepreneurial education. Jones and English, (2004) argue that there is a conceptual difference between entrepreneurship education and enterprise education: the former has to do with creating an attitude of self-reliance and the later is for creating opportunity-seeking individuals. But to others, like Frank et al. (2005), the two terms are conceptually the same, but contextually different. According to Frank et al. (2005) entrepreneurship education is a term mainly used in America and Canada, and enterprise education in the UK and Ireland. Another interesting observation is in the work of Jones and English (2004) who have constantly substituted entrepreneurship education with entrepreneurial education; and defining it as "a process of providing individuals with the ability to recognize commercial opportunities and the insight, self-esteem, knowledge and skills to act on them" (Jones and English, 2004:2).

Accordingly, entrepreneurship education can be defined as the process of professional application of knowledge, attitude, skills and competencies. It is more than teaching students how to become independent business owners. It is about creating and nurturing a learning environment that promotes entrepreneurial traits and behaviours, such as becoming creative and independent thinker, risk taker, assuming responsibility, and valuing diversity.

3. Methods

This study conducted a systematic review and analysis of EE research published in major journals for the ten-year period from 2008 to 2017. Drawing from OECD (2009) and Alonzo (2012), the framework proposes five core indicators as enumerated below for this policy dimension on the promotion of entrepreneurial education as follows: 1) entrepreneurial education policy, 2) Support of entrepreneurial learning in basic education, 3) Support of entrepreneurial learning in higher education, 4) Business-academic collaboration and 5) Non-formal education on EL and management of SMEs.

4. Discussion

This paper aims to empirically investigate the promotion of entrepreneurship education in 5 selected Southeast Asian countries, namely, Indonesia, Malaysia, Philippines, Singapore, and Thailand, analysing published articles from 2006-2017. The reviewed countries are presented as follows.

4.1. Indonesia

Indonesia's performance in the promotion of entrepreneurial education has been quite good in almost all aspects of policy dimension. The government has clearly articulated the linkages between EL policy and its policy documents in other sectors, including SME, industry, employment, and innovation. The EL has also been integrated in secondary school teaching materials and supported with staffs that have knowledge and skills for teaching entrepreneurship. While the government, together with higher education institutions, have developed and offered national quality assurance system and course subjects for small business and entrepreneurship, universities and private sector have also collaborated and supported the EL programmes, curricula, research, customized training services, coaching, business plan competitions as well as awards and scholarships. Furthermore, information on training programmes, networks of providers and online services are available throughout the country.

According to Mas (2014), the EL would be taught to all students in all senior high schools and not only in the vocational high schools.

Moreover, other types of vocational secondary schools teach students a variety of skills which help them to be entrepreneurs in the future such as tourism management, information technology, and fashion. These schools also provide students with entrepreneurial skills in some ways although the subject of EL is not included in the final examination.

Nevertheless, many public universities now start to offer entrepreneurship as a compulsory or elective subject for their students. Business-major students in some universities may also choose Entrepreneurship as minor elective in their degree programme. Meanwhile, the adaptation of the ASEAN Common Curriculum based on the CoBLAS[1] project is still in a pilot stage. Similarly, the nationwide EL network among universities does not exist as there are still very limited universities emphasizing EL.

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[1]CoBLAS refers to education-training-practical relationships between (a) academics (university education), (b) the local SMEs and (c) students as the consulting apprentice. The model emphasizes the important role played by the university as the centre of excellence and works as a platform for human resources development for local business promotion (Ohe, 2008)

Collaboration programmes of EL between the business sector and educational institutions have been developed fairly well in Indonesia. Universities and private sector jointly support EL programs, curricula, research, customized training service, coaching, business plan competitions, awards and scholarships. Some large firms conduct these EL programmes in universities (Alias and Musa, 2014). However, collaborations between business and education institutions are mostly driven by the needs of the business sector for qualified graduates.

4.2. Malaysia

In Malaysia, the studies indicate EE as one of the strategies adopted by the Malaysian Government to respond to pressures of globalization and national development, and entrepreneurship has become a core subject or compulsory course in most of the HEIs since the mid-1990s. Hence, all papers aim to discuss the effectiveness of EE in Malaysian HEIs in terms of students' entrepreneurial intentions (Mohamad et al., 2012, 2015; Ramayah et al., 2012), willingness, knowledge, and skills of entrepreneurship readiness (Cheng et al., 2009; Othman et al., 2012; Othman and Nasrudin, 2016), elements of teaching systems (i.e. facilities, teaching methods, or curriculum) (Cheng et al., 2009; Othman et al., 2012; Othman and Nasrudin, 2016).

The move by the Government to transform the Malaysian economy to a knowledge based one has led to the proliferation of entrepreneurial education in the country. Both the Vision 2020 and the Tenth Malaysia Plan 2011-2015 highlight the importance of entrepreneurship education. The curricula designed to promote entrepreneurial orientation place strong emphasis on creativity, innovation, and entrepreneurship across all specialisations (Ismail and Admed, 2013).

Indeed, higher education institutions (HEIs) in Malaysia (Arokiasamy, 2012) have increasingly offered their entrepreneurship-related programmes and courses as a response to society's increasing demands. Several institutes of higher learning participate in the CoBLAS programme. All public universities have introduced courses related to entrepreneurship. Further efforts have been made by other organisations, including SME Corp., to develop collaboration programmes related to entrepreneurship learning between the business sector and education institutions. The collaboration between business and academia has improved considerably as a consequence of SME Corp's initiatives (Ismail and Admed, 2013). In addition to commerce as a course and technical and vocational schools in the country, entrepreneurial courses are also available at all levels of secondary education in Malaysian schools. However, the extent of interaction between students and industry can still be improved.

In Malaysia, non-formal education on entrepreneurial learning is limited (Arokiasamy, 2012). Entrepreneurial education in Malaysia takes place generally in formal settings through training offered by various training institutes related to management of SMEs. Nevertheless, workers do get substantial learning from on-the-job training.

4.3. Philippines

The importance of developing entrepreneurial skills and fostering a culture of entrepreneurship and entrepreneurial mindset is integrated in the Philippine Development Plan. Entrepreneurship education policy linkages are clearly articulated with SME, industrial, employment, and innovation policy documents. It is also integrated in the Philippine Development Plan's section on developing human resources that is crucial to increasing firm-level productivity and boosting competitiveness awareness. (Velasco, 2013)

Key Philippine universities like Ateneo de Manila University, University of the Philippines and De La Salle University offer programmes on entrepreneurship. Only De La Salle University adopted the ASEAN Common Curriculum (COBLAS). The Commission on Higher Education sets the competency standards and curriculum for the BS Entrepreneurship Programme. Key universities offer such courses and programmes. National quality assurance system and course subjects for small business and entrepreneurship are developed and offered. Both universities and the private sector jointly support EL programmes, curricula, research, customized training service, coaching and various partnership modes such as apprenticeships, mentoring, competitions, awards and scholarships. The universities have mentoring, apprenticeship and on-the-job training programmes where academic institutions partner with enterprises that would hire students for short periods e.g. during the summer. There are also business plan competitions sponsored by the private sector (Velasco, 2013). Businesses also provide scholarships for students in selected courses that their companies need.

4.4. Singapore

The recent Global Innovation Index, which shows Singapore sliding from third to eighth place, has put the spotlight on innovation and creativity in the country. There are two parts to innovation: Generating an idea or invention and converting that into a useful application or innovation that is used by others. According to Fong (2013), Singapore's education system should not only focus on the cultivation of creativity, but also on the building of an entrepreneurial mindset among students.

There is a concerted effort by the government to promote entrepreneurial education in the educational system. The entrepreneurial learning (EL) policies and projects have been implemented with sufficient budget and proper evaluation and monitoring system. The overall development objectives do articulate the EL policies with R&D, SME and industrial strategies. The EL partnership gets support from government to cover the cost of administration, work plan, and capacity building to sustain the EL objectives (Youth Entrepreneurship Scheme for Schools (YES! Schools); ACE Schools Programme).

Universities are integral to Singapore's efforts to stimulate industrial development in this island city state through innovation (Goh, 2005). To this end, the Ministry of Education in Singapore granted the two state universities, NUS and Nanyang Technological University (NTU), more operational freedom by incorporating the institutions as not-for-profit organizations with the purpose of becoming more entrepreneurship-oriented (Mok, 2008).

NUS offers entrepreneurship education since the late 1980's which has evolved over time and increased in quantity and quality. As in 2015, a wide variety of programmes (traditional lectures, seminars and business plan competitions) are offered to students from all faculties. NUS, in recent years, introduced innovative entrepreneurship experiential learning through its overseas internship programmes where students complete an internship with high-tech start-ups while attending Entrepreneurship programmes at partner universities abroad. A study conducted in 2014 among more than 800 students at NUS investigated the link between entrepreneurship education programmes and students' entrepreneurial behaviour (Ho et al, 2014,). Ho et al. (2014) found that entrepreneurship education encouraged entrepreneurial behaviour in students, and more profoundly, that experiential learning had a significantly higher impact on entrepreneurial engagement than classroom-based programmes.

4.5. Thailand

The Thai government elaborates entrepreneurial learning (EL) in the national basic education core curriculum 2008. The 2008 basic education curriculum indicated five key competencies – communication capacity, thinking capacity, problem-solving capacity, capacity for applying life skills, and capacity for technological application. Among many learning areas specified in the core curriculum, "Occupations and Technology" learning area indicates understanding and acquiring necessary skills and experiences; proper perception of future career; technological application for occupational development; possessing morality and favourable attitude towards occupations. However, teaching staffs and materials may not be well developed to promote entrepreneurship as key competence in primary and secondary level (excluding vocational education). There has been an attempt to revise the current learning curriculum to address the skill and key competency needed for the 21th century skills.

Some Thai vocational colleges and universities offer subjects on entrepreneurship, which are beyond the traditional business subjects like management, finance, marketing or accounting. It is difficult to evaluate them from the title of degrees offered by universities. In addition, there is no national standard for such subject. Many public and private universities offer degrees on entrepreneurship or related courses.

The Thai government and some NGOs provide non-formal education on EL and business management for SMEs. However, information on training programme and training providers might be somewhat limited and sporadic. The New Entrepreneur Creation (NEC) programme has been operated by the Department of Industrial Promotion since 2002. Its main objectives are to stimulate and support young graduates, unemployed persons, and knowledge employees to become entrepreneurs. The main delivery channels are via an education short programme which provides training on business planning, managerial skills, company visits, an advisory service after training, access to marketing channels, and business matching.

5. Conclusion

This paper has conducted a systematic review on the ten years of literature on EE in in 5 selected Southeast Asian countries, namely, Indonesia, Malaysia, Philippines, Singapore, and Thailand providing an understanding of the extent to which EE research has been achieved in the academe and discusses on areas for future directions in theory and practice.

Extra focus on entrepreneurship becomes a trigger to facilitate EE in the Southeast Asian countries to cultivate students toward becoming entrepreneurs in response to globalization and competitiveness. The study clearly reveals that the existence of the intertwined connections between EE initiatives and development and economic growth. This finding demonstrates that increasing the acceptance of the value of EE in entrepreneurship in the Southeast Asia region, particularly in the countries that foster positive attitudes toward entrepreneurship like Indonesia, Malaysia, Philippines, Singapore, and Thailand, is high on the policy agenda. Furthermore, a considerable diversity exists regarding the objectives, content, pedagogy, and outcomes in the abovementioned studies.

Given the complex and multi-faceted nature of entrepreneurship, the researcher theoretically calls for further research to examine how EE works, thereby contributing to the effective development and

improvement of EE (Nabi et al., 2017; Pittaway and Cope, 2007); in practice, educators advocate effective learning moving beyond knowing and understanding entrepreneurship to enable entrepreneurial thinking and acting (Neck et al., 2014; Rauch and Hulsink, 2015). Therefore, the results and discussion in this review would not be inclusive; on the contrary, this study provides a starting point and requests other scholars to commit to the field of EE research in the Southeast Asia to propose and gain advancements in theory and practice different from the American or European viewpoints.

References

Alias, N. and Musa, N. (2014), From state Islamic religious schools to Syariah and legal studies: human resource in the Islamic sector and academic entrepreneurship in Malaysian higher education institutions, *Pertanika Journal of Social Science and Humanities*, 22 (S), pp. 223-238

Arokiasamy, A.R.A. (2012), The influence of globalization in promoting entrepreneurship in Malaysia, *South East European Journal of Economics and Business*, *7 (2)*, 149-157.

Chang, W.L., Liu, W.G.H. and Chiang, S.M. (2014), A study of the relationship between entrepreneurship courses and opportunity identification: an empirical survey, Asia Pacific Management Review, 19 (1), pp. 1-24.

Elqadri, Z.M., Priyono, P. and Sukmaningrum, D. (2016), Testing model student entrepreneurial intentions SMK in the Yogyakarta, International Journal of Applied Business and Economic Research, 14 (3), pp. 2077-2095.

Frank, H; Korunka, C.; Lueger, M. and Mugler, J. (2005) Entrepreneurial orientation and education in Austrian secondary schools. *Journal of Small Business and Enterprise Development*, 12 (2) pp. 259 – 273

Garavan, T. and O'Cinneide, B. (1994). Entrepreneurship education and training programmes: a review and evaluation –part 1. *Journal of European Industrial Training*, 18(8), pp. 3-12.

Goh, A. (2005) Promoting innovation in aid of industrial development: the Singaporean experience, *International Journal of Public Sector Management*, Vol. 18 Issue: 3, pp.216-240,

Ho, Y., Low, P. and Wong, P. (2014). Do University Entrepreneurship Programmes Influence Students' Entrepreneurial Behaviour? An Empirical Analysis of University Students in Singapore, Innovative Pathways for University Entrepreneurship in the 21st Century Advances in the Study of Entrepreneurship, Innovation and Economic Growth, 24, pp. 65-87.

Jones, C. and English, J. (2004) A contemporary approach to entrepreneurship education. *Education + Training*, 46 (8/9), pp. 416-23.

Mas, S.R. (2014), The implementation of the school principal's entrepreneurship competence in the management of educational hotel (Edotel) in Smkn 3 Malang, Indonesia, International Journal of Applied Business and Economic Research, 12 (4)

Matlay, H. (2008) The impact of entrepreneurship education on entrepreneurial outcomes. *Journal of Small Business and Enterprise Development*, 15 (2), pp.382-396.

Mok, K.H. (2008). Singapore's Global Education Hub Ambitions: University Governance Change and Transnational Higher Education, *International Journal of Educational Management*, 22 (6), pp. 527-546.

Nabi, G., Liñán, F., Fayolle, A., Krueger, N. and Walmsley, A. (2017), The impact of entrepreneurship education in higher education: a systematic review and research agenda, *Academy of Management Learning & Education*, 16 (2) pp. 277-299.

Neck, H.M., Greene, P.G. and Brush, C.G. (2014), Teaching Entrepreneurship: A Practice-Based Approach, Cheltenham Glos: Edward Elgar Publishing.

Packham, G.,Jones, P, Miller, C., Pickernell, D., & Thomas, B., (2010) Attitudes towards Entrepreneurship education: A comparative analysis, *Education & Training*, 52 (8/9), pp. 568-586,

Pittaway, L. and Cope, J. (2007), Entrepreneurship education: a systematic review of the evidence, *International Small Business Journal*, 25 (5), pp. 479-510.

Rasmussen, E. A. and Sorheim, R. (2006). Action-based entrepreneurship education. *Technovation,* 26, pp. 185-194

Rauch, A. and Hulsink, W. (2015), Putting entrepreneurship education where the intention to act lies: an investigation into the impact of entrepreneurship education on entrepreneurial behavior, *Academy of Management Learning & Education*, 14 (2), pp. 187-204.

Singer S., Amoros, J. E., Moska, D., (2015). Global Entrepreneurship Monitor. 2014 Global Report. Babson Park, MA, United States: Babson College;

Velasco, A.L. (2013), Entrepreneurship education in the Philippines, *DLSU Business and Economics Review*, 22 (2), pp. 1-14.

LEADERSHIP STYLES AND QUALITY IN UNIVERSITIES: EVIDENCE FROM CHILE

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Abstract

The aim of this work is present an exploratory analysis about the relationship between leadership styles and the quality of university careers from universities of Chile. We work with a sample of 42 academic units belonging to four Chilean universities. For this purpose, an exploratory study was carried out in four Chilean universities. MLQ Bass and Avolio questionnaire to 42 academic leaders were conducted, which were processed and analyzed according to quantitative design by the regression model. The findings show that transformational, transactional and passive avoidance leadership styles together explain 65.6% of the quality of university careers. Finally, in this exploratory research, preliminary evidence of the relationship between transformational leadership and career quality is discovered and the scope and implications of these findings are discussed.

Keywords: Leadership, universities, higher education, quality.

1. Introduction

Since the 1980s, most research on leadership has focused on the characteristics of the leader and his effects on the organization. here are multiple ways to typify leadership styles. However, nowadays Bass and Avolio theory has been consolidated, identifying three dimensions to study leadership: (1) transformational leadership; (2) transactional leadership; (3) passive / avoidant style (Banks et al., 2016).

Bass' theory states that in transformational leadership, the leader motivates followers by inspiringthem, setting challenges and motivating personal development. Transformational leadership encourages the achievement of high collective standards, through a sense of purpose and a common mission and vision. In turn, transformational leaders are characterized by: achieving an idealized influence based on the leader's charisma that generates trust in followers who admire, respect and imitate (Rodríguez et al., 2017); generate an inspirational motivation by building the perspective of a desirable future, achievable and giving meaning and intrinsic value to the work of people in a climate of collaboration and respect (Bonau, 2017).

The second leadership style is transactional, in which the leader motivates his followers via specific benefits provided that they are capable of accomplishing the tasks assigned to them. The transactional style involves negotiation between the leader and subordinates. Thereis also the "laissez faire" leadership style, in which the leader rejects control and allows subordinates to take the decisions (Bass, 1990).

Bass and Avolio in the third style establish a category that considers the modality of: laissez faire, which stands out because the leader tries to avoid decisions and actions that make him responsible for the results (Skogstad et al., 2017); as well as the address by active exception (Galinha et al., 2017). Under this logic, in this leadership style, authority is not exercised, and the physical or psychological absence of the direction occurs at critical moments, avoiding the conduction and control of the followers (Skogstad et al., 2014).

Leadership styles have been shown to have an impact on both public and private organizations (Chiang and others 2014) and on various aspects, such as motivation (Zareen and others 2015), climate (Boehm and others 2015), knowledge management (Mittal and Dhar 2015) and the results of the organization (Harnsanto and Roelfsema 2015). However, in these researchs, the level of analysis chosen has been top management; In addition, the variables have been measured according to the self-perception of the leader or through the perception of the followers.

Quality is a polysemic term that admits multiple meanings. However, as proposed by Harvey and Williams (2010), the focus of quality comes from the field of the management of organizations, precisely the logic of total quality or Total Quality Management TQM, however, the progress that has been achieved The adaptation of this perspective to the field of higher education in the last 25 years has been remarkable.

Therefore, the aim of this paper is to present an exploratory study about to the leadership styles and quality of careers in universities in Chile, an emerging country.

2. Methodology

The strategy of inquiry in this research is a non-experimental design with a quantitative approach. (Creswell 2009). The method used is the application of a cross-sectional study using a Multiple Leadership Questionnarie (MLQ 5X short form) from Bass and Avolio (1995), In turn, the questionnaire was given to 42 academic leaders from four universities of Chile. In order to encourage the academic leaders to complete the questionnaire, they were contacted a maximum of three times each. The unit of analysis is leadership styles. We ask to choose a number from the Likert scale from 1 to 7, in order to give the perceptions about situations associated to the Bass y Avolio MLQ test.

The level of analysis involves the top management team. The director of the career, or the faculty designated representative directly involved in a decision-making, was requiered in order to complete the questionnaire. The questionnaire was answered by xx 72, 4% of the leaders.

3. Results

A multiple regression model is then used. It considers the quality of careers as a dependent variable whereas leadership styles are considered to be independent variables.

The model is represented by the following regression equation:

$$Vx = \alpha + a\beta1 + b\beta2 + c\beta3 + d\beta4 + e\beta5 + f\beta6 + \varepsilon i$$

Where:

Vx	=	Quality of careers
α	=	Constant
a,b,c,d,e,f	=	Independent variables: transformational leadership, transactional leadership, passive avoidante leadership.
β1 , β2 ,β3 ,β4 , β5 , β6	=	Regression coefficients
εi	=	Model deviations

Results presented in Table 1 show that the proposed model is quite adequate for explaining the quality of careers.

Indeed, the model's explanatory ability is equal to 68.1% (R^2 squared), while the analysis of variance shows that the model is statistically relevant and pertinent.

Figure 1. Analysis diagram.

This study reveals the need for a comprehensive analysis of a set of variables, rather than the independent analysis of each variable. Joint analysis of the variables described above shows that they account for 68.1% of the changes in the quality.

Table 1. ANOVA

ANOVA[a]					
Model	Sum squared	de	Cuadratic average	F	Sig.
	Regression	13,969	3	4,656	27,092	,000[b]
1	Residual	6,531	38	,172		
	Total	20,500	41			
a. D Variable dependiente: ACCREDTATION YEARS					
b. P Variables: (Constante), PASSIVE AVOIDANT, TRANSFORMATIONAL, TRANSATIONAL					

4. Conclusion

Research results are basically consistent with prior literature on the subject since a positive link can be established between leadership styles and quality. The relevance of this study is to use the accreditation average years for the careers in order to make a proxy to the performance.

This exploratory study adds evidence that shows that the measurement of transformational and transactional leadership can be used to predict subsequent performance. How such transformational leadership specifically develops higher levels of potency, cohesion, trust, identification, and performance are fruitful areas for future leadership research to begin exploring.

References

Banks, G. C., McCauley, K. D., Gardner, W. L., & Guler, C. E. (2016). A meta-analytic review of authentic and transformational leadership: A test for redundancy. *The Leadership Quarterly*. 27 (4), 634-652.

Bass B (1985) Leadership and Performance Beyond Expectations. The Free Press. New York. 1985. Bass, B.M. & Avolio, B.J. (Eds.). (1994). Improving organizational effectiveness through transformational leadership. Thousand Oaks, CA: Sage Publications, 243.

Bass B (1990) From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*. Vol. 18, pp. 19-31. 1990.

Boehm, S, Dwertmann, D, Bruch, H & Shamir, B. (2015). "The Missing Link? Investigating Organizational Identity Strength and Transformational Leadership Climate as Mechanisms that Connect CEO Charisma with Firm Performance". The Leadership Quarterly. Volume 26, n. 2, pp. 156-171. Consulta: 20 de agosto de 2017.

Bonau, S.(2017). How to become an inspirational leader, and what to avoid. Journal of Management Development, 36(5), 614-625.

Chiang, M, Gómez, N & Salazar, C. (2014)."Satisfacción laboral y estilos de liderazgo en instituciones públicas y privadas de educación en Chile". Cuadernos de Administración. Universidad del Valle, volumen 30, número 52, pp. 65-74. Consulta: 20 de agosto de 2017.

Creswell (2009). Research design: qualitative, quantitative, and mixed methods approaches. Chapter One-Selection Of Research Design, 3rd Ed. SAGE publication, 295.

Galinha, S., Vala, P. G., Jardim, J., & Pereira, A. (2016). Leadership perceptions of teachers who hold positions of leadership, management and coordination. Interacções, 12(42). 32-43.

Harsanto, Budi y Roelfsema, Hein (2015). Asian leadership styles, entrepreneurial firm orientation and business performance. *International Journal of Entrepreneurship and Small Business*, volume 26, número 4, pp. 490-499.

Harvey, L., & Williams, J. (2010). Fifteen years of quality in higher education, 3-36.

Mittal, S & Dhar, R (2015) "Transformational Leadership and Employee Creativity: Mediating Role of Creative Self-Efficacy and Moderating Role of Knowledge Sharing". Management Decision. Volumen 53, número 5, pp. 894-910. Consulta: 20 de agosto de 2017.

Rodríguez-Ponce E, Pedraja-Rejas L (2017) Relación entre el liderazgo transformacional y el clima orientado al servicio de los estudiantes: evidencia exploratoria desde Chile. *Interciencia*, 42: 633-640.

Skogstad, A., Hetland, J., Glasø, L., & Einarsen, S. (2014). Is avoidant leadership a root cause of subordinate stress? Longitudinal relationships between laissez-faire leadership and role ambiguity. *Work & Stress*, 28(4), 323-341.

Skogstad, A., Hetland, J., Glasø, L., & Einarsen, S. (2014). Is avoidant leadership a root cause of subordinate stress? Longitudinal relationships between laissez-faire leadership and role ambiguity. Work & Stress, 28(4), 323-341.

Zareen, M, Razzaq, K & Mujtaba, B. (2015). "Impact of Transactional, Transformational and Laissez-Faire Leadership Styles on Motivation: A Quantitative Study of Banking Employees in Pakistan". Public Organization Review. Volume 15, n. 4, pp. 531-549. Consulta: 20 de agosto de 2017.

Posters

PERCEIVED SELF-EFFICACY OF MENTORS ACCOMPANYING BEGINNING TEACHERS IN AN INDUCTION PROGRAM IN CANADA

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Abstract

Mentoring is the most popular strategy to help new teachers cope with and overcome the challenges associated with entering the profession (Strong, 2005). However, taking on the responsibilities of a mentor is not an innate skill and it is imperative that mentors receive professional support to develop their skills (Stanulis, Brondyk, Little and Wibbens, 2014). Some aspects concerning the professional development of these teachers have, however, been little addressed by the research, in particular their self-efficacy (Bandura, 1977), which nevertheless is a concept strongly linked to motivation and performance at work (Gibson and Dembo, 1984). The objective of this research was to develop knowledge, which is virtually non-existent at the present time, about the sources of self-efficacy in teachers acting as mentors and the process by which they are able to increase and maintain this self-efficacy. To do so, a single case study was used and eleven mentors from elementary and secondary school involved in an induction program in Ontario, Canada, participated in a semi-directed individual interview. The data was analyzed by using the inductive method of Blais and Martineau (2006) and the results will be communicated during the presentation. This communication, in addition to presenting mentors' sources at the origin of their self-efficacy and strategies for maintaining it, will explore avenues for developing training and coaching that meet the specific needs of mentors and how to maximize their competence and success in already existing mentoring programs.

Keywords: *Mentoring, mentor teachers, induction program, beginning teacher, self-efficacy.*

A SURVEY OF THE STUDENTS' PERCEPTION OF THE VALUE OF UNDERGRADUATE PHYSICS PRACTICALS AT A SOUTH AFRICAN UNIVERSITY

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Abstract

For the conductance of physics practical at the University of Johannesburg, use was made of one of the seven technologically enhanced laboratories. A software embedded system is used to assess the students' results. Once the students submit their results, their results are captured by the data capturer and fed into the software system and the results are simulated for comparison with the background readings. To appreciate the scientific value of these experiments and its offerings, a modified questionnaire, developed by Deacon & Hajek (2011) has been used to determine whether the students consider their laboratory experiences as meaningful and valuable. A questionnaire survey has been administered to 100 first year university students engaged in a physics disciplined study. Included in this questionnaire, is an open question section, which explores aspects of the physics offering that are in favour or disfavour to the students. A Likert-type scale was used to analyze the results. The framework used for this study, is taken from the work developed by the American Association of Physics Teachers (AAPT), which highlights goals to be achieved in a physics laboratory. The results reveal that students have a positive attitude towards physics practicals and appreciate the value of the technologically advanced laboratory.

Keywords: Laboratory, software, practicals, value and experiments.

1. Introduction

According to Deacon & Hajek (2011), the perception of the value of physics practicals refers to an "enhancement" of the students' knowledge, skills abilities and other attributes that they acquire from an educational laboratory experience. It is said that laboratory work is the subset of all activities such as demonstrations, hands-on activities and activities for the attainment of other skills such as analytical and practical skills (Kirschner & Mester, 1988; Deacon & Hajek, 2011). Besides these activities, von Aufschnaiter and von Aufschnaiter (2007), says that laboratory activities should entail the development of concepts rather than finding the relationship between theory and practice. Other researchers such as Hanif et al. (2009) view practical work as the development of both analytical and problem-solving skills. For a more holistic view of the laboratory skills, Elawady & Tolba (2009) have stated that there are four skills that are necessary for such a development and they are conceptual understanding, Design skills, Professional skills and Social skills. The American Association of Physics Teachers (AAPT, 1998) have postulated similar goals for effective learning in the laboratory. A well-developed laboratory with well-crafted activities can make laboratory experiences for students enjoyable and interesting (Deacon & Hajek, 2011).

The University of Johannesburg makes use of seven dedicated technologically advanced laboratories for the conductance of practicals. In the context of the above, we consider the perceptions of the students towards the value of physics practicals through analysis of a survey questionnaire to find factors that could contribute to positive satisfaction about their laboratory experiences.

2. Research question

This study was undertaken to determine the students' perception of the value of the physics practical offering and the factors that contributed to their positive experiences in a technologically well-resourced laboratory.

3. Conceptual framework

This study made use of a framework, which recognizes five goals that are important in promoting effective learning in a laboratory. Such goals as promulgated by AAPT (1998) are:

(a) The Art of Experimentation, (b) Experimental and Analytical skills, (c) Conceptual learning, (d) Understanding the Basic knowledge in Physics, and (e) Developing Collaborative Learning skills.

4. Methodology

4.1. Participants

A survey has been administrated to 100 students that are engaged in a physics disciplined study at a South African university. These students were aware that the survey was voluntary and that they would not be jeopardized in their participation. The survey took about 15 minutes to complete.

4.2 Instrument and procedure

A modified questionnaire by Deacon & Hajek (2011) was used for this study. Over and above, these questions the students were required to answer a further 5 open questions in the end.

5. Results

The results of the survey are given in the table below (For purposes of discussion Strongly Agree/Disagree are combined with Agree/Disagree).

5.1 Perceptions of the students' value of their laboratory experiences

Table 1. Factors contributing to the students' perceptions of the value of the laboratory offering.

No	Description	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The labs contributed to my knowledge and understanding of physics	45	40	10	0	5
2	The labs helped to improve my lab skills and techniques	48	40	8	4	0
3	I see the relevance of the experiment in my physics studies	35	40	12	6	7
4	The labs were interesting	44	32	15	6	3
5	I recommend the lab component should include a pre-lab quiz	15	28	32	13	12
6	Adequate help was provided during the lab session	60	27	13	0	0
7	The deadline for the submission of lab reports should be extended	18	12	25	35	10
8	The time allocated for the experiment should be extended	5	12	28	42	13
9	I receive constructive feedback on my lab report	4	36	34	13	13
10	I was marked fairly on my lab report	6	63	7	17	7
11	The experiment helped me connect with the theory done in class	17	42	14	13	14
12	The experiment was interesting and enjoyable	43	38	9	8	2
13	This experiment helped me develop my data interpretation skills	28	48	16	8	0

A large majority of students have responded positively about the laboratories in respect to its contribution to their knowledge (item1, 85%) as well as to an improvement in their laboratory skills (item 2, 88%). A huge effort is made by lecturers to make the laboratory sessions interesting (item 4, 76%) and the experiments interesting and enjoyable (item 12, 81%). Students have seen the relevance of the practicals in relation to the theory covered in class (item 11, 59%). In respect to the assistance provided to students during laboratory sessions (item 6, 87%) students are in overwhelming agreement. Less than 50% of the students are of the opinion that pre-lab quiz should be introduced to improve their preparedness for laboratory sessions (item 5, 43%). The time allocation for experimental investigation was more than adequate and thus no need for extension (item 8, 17%). Item 7 for which the students have responded negatively pertains to the time-lines for the submission of laboratory reports. Another factor

for which the students have responded positively was the aspect of laboratory reports being fairly assessed (item 10, 69%), but they were unhappy about the feedback they received in such reports. They felt that the feedback was not constructive enough in understanding their mistakes. In the final item of the questionnaire (item 13, 76%), the students were very positive about the experiments as it provided them with an opportunity to improve their data and interpretation skills.

5.2 Students' responses to the open questionnaire

Some of the student's responses to the open questions are shown below:

Table 2. Samples of student's comments about the laboratory

Positive comments	Negative comment
Better understanding of what I been doing in class	Old resources
They helped me connect with the theory in class	Equipment malfunction
Fun to do the experiments	Time of day for practicals

6. Discussion and conclusion

This research was done to get some feedback from students about their perceptions about the value of the nature of undergraduate practical offerings and factors that contributes to their positive perceptions of the laboratories. The item that contributed most to the satisfaction of the students was item 1 and that pertains to conceptual understanding and this factor contributed to a better understanding of physics. This item aligns itself well with goal 3 of the conceptual framework for this study. Other factors of the laboratory offering, such as those pertaining to the help that the laboratories provided in developing their analytical (item 2) and interpretation skills (13) was well received. This factor aligns itself well with goal 2 which deals with experimental and analytical skills in successful completion of their laboratory reports. Of paramount importance of the laboratory offering is to make laboratory sessions interesting and enjoyable (items 4 and 12). These will ensure that the students are engaged in their practical work for a sustained period of time whilst gaining some expertise in the Art of Experimentation (goal 1). For the understanding of the Basic Knowledge of Physics (goal 4), factors such as items 11 and 3 have contributed to a better understanding of physics and further the students were able to find a better relationship between theory covered in class to the practicals covered in the laboratories. On the issue of Collaborative Learning skills (goal 5), this goal has not been achieved in our laboratory since the laboratories were designed for students to work in cubicles to conduct their experiments.

Further, other factors for which students have responded negatively pertain to their feedback to laboratory reports. This happens due to the fact that they are not acquainted with the software that is used to assess their practicals. Besides this aspect, by and large their laboratory experiences were positive on many items of the questionnaire and contributed to a better understanding of their physics.

References

AAPT (American Association of Physics Teachers). (1998. The goal of introductory physics laboratory, *American Journal of Physics*, 66(6), 483-485.

Deacon, C, & Hajek, A. (2011). Student Perceptions of the Value of Physics laboratories, *International Journal of Science Education*, 33(7), 943-977.

Elawady, Y. H., & Tolba, A. S. (2009). Educational Objectives Of Different Laboratory types: A Comparative Study, *International Journal of Computer Science and Information Security*, 6(2), 89-96.

Hanif, M., Sneddon, P.H., Al-Ahmadi, F.M., & Reid, N. (2009). The perceptions, views and opinions of university students about physics learning during undergraduate laboratory work, *European Journal of Physics*, 30, 85-96.

Kirschner, P.A., & Meester, M.A.M. (1988). The laboratory in higher science education: Problems, premises and objectives, *Higher Education*, 17, 81-98.

Von Aufschnaiter, C., & von Aufschnaiter, S. (2007). University students' activities, thinking and learning during laboratory work, *European Journal of Physics*, 28, S51-S60.

TEACHING BETTER READING SKILLS IN VOCATIONAL TRAINING: WHAT REFLEXIVE JOURNALS REVEAL

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Abstract

Secondary vocational training (VT) teachers expect students to have the necessary reading skills to meet curriculum demands. These expectations are contradicted by the growing number of students who lack self-sufficiency in reading and who experience considerable difficulties. Our research-action training project aimed to improve reading comprehension of printed and digital texts by VT students (secretarial, accounting, computer support). It also aimed to document the adoption of a proven reading comprehension teaching approach: Reading Apprenticeship (RA) (Schoenbach, Greenleaf, & Murphy, 2012). Nineteen teachers were trained in this approach, which they applied in their classrooms with their students. During the two years of research-action, the teachers were supported by a researcher from the team who provided feedback on their descriptive and reflexive journals (92 entries in total). Qualitative analysis of the journals was carried out along two dimensions: the dimension relating to the RA approach, and the reflexive dimension. The results refer to various modalities of adopting the approach, from improvements and adaptations, to frequent modeling of high-level reading strategies, to wide variety in the grouping of students for collaborative reading, and to extensive use of the gradual release of responsibility model as student progress was observed.

Keywords: Reading, vocational training, teaching, reflexivity, qualitative research.

1. Background

Among educational institutions with adolescents and adults with low literacy levels, secondary vocational training (VT) centers host a diverse population of students, many of whom have had difficult educational pathways (Hamelin, 2014; Tremblay, 2010). The majority of VT students in Quebec are adults returning to school and from a variety of backgrounds (Deschenaux, 2007). A smaller number of students (26.6% for all of Quebec), arrive directly from general secondary programs to continue their pathways (Misiorowska, 2014). However, VT programs involve increasingly complex readings in print and digital media. In the classroom, many VT students have insufficient reading skills to read required course material independently (Grossman, Roiné, & Chatigny, 2014), whether in paper or digital format. While the teaching of reading strategies in various school subjects has gained ground (Shanahan & Shanahan, 2008), reading comprehension strategies are usually taught by teachers specialized and trained in French-language education (in Quebec), which is not the case for high-school VT teachers, who are not trained in these strategies in university teacher education programs (Therriault, 1998). While new educational models advocate teaching reading comprehension in various disciplines in an integrated way, to teach a trade in Canada and elsewhere (e.g., New Zealand, UK), there exists, as far as we know, no model for teachers to fully integrate reading strategies in VT that we can draw on. In such a model, full integration would take shape in the simultaneous teaching of reading strategies and discipline-related content by the same teacher, for example, in secretarial or hairdressing training. As part of a research-action training project, we drew on the Reading Apprenticeship (RA) approach (Schoenbach, Greenleaf, & Murphy, 2012) to train VT teachers.

2. Reference framework and objectives

We used the RA approach as a model for integrating reading strategies to meet the needs of a VT center in Montreal which requested it. This approach goes beyond teaching reading strategies. It places great importance on teachers' commitment to discovering their own comprehension processes and strategies when reading in their discipline. It allows them to better model these processes and strategies and make them visible to their students, who in turn have opportunities to read in class in an "active" and sustained way. Indeed, this teaching approach advocates awareness of one's own reading strategies and

improving them by reading disciplinary texts in class. In this approach, teachers are considered "expert readers" in their discipline and develop teaching routines that help "novice" readers to become proficient in reading comprehension through more effective strategies. We used this approach to train VT teachers with the aim of documenting, on the one hand, how this group of teachers, who teach a trade, were able to adopt such an approach to teach reading strategies to their students, and on the other hand, the impact of this approach within their teaching. We also used a reflexive approach, as a way of stepping back from the action (Saint-Arnaud, 2001), which has an effect on teachers' future actions.

3. Methodology and analysis

The main instrument of data collection used in this research-action training project was the teachers' reflexive journal (Perrenoud, 2001; Boud, 2001; Schön, 1987), which is an ideal instrument for collecting the perceived benefits of teaching reading comprehension using reading strategies integrated with VT content. The journal allowed teachers to engage in a process of reflexion and analysis of a teaching and learning situation and to document the integration of the RA approach into their practice, as well as its benefits.

The journals of 19 accounting, secretarial, and computer support teachers were analyzed. The first series of journals was collected between March 2015 and December 2015, while the second series was collected between January 2016 and June 2016. Participating teachers were asked to write a journal entry once a week and share it every other week with a member of the research team. This provided a written record of the teachers' assimilation and integration of the approach, gave us privileged access to the teachers' reflexion and questioning, and provided a summary of their learning (Schön, 1987; Vacher, 2011; Saint-Arnaud, 2001). Maintaining this type of journal develops reflexion about practice by stepping back from the action (Saint-Arnaud, 2001). For our analysis of the journals, on the one hand, we analyzed the content by looking at elements belonging to predetermined categories of the RA framework, including the teaching of strategies, frequency and context, and the adoption of various modalities and routines related to the RA approach; on the other hand, we analyzed the reflexive aspects of the journals by taking a closer look at the teachers' reflexion on their own practice and on the adjustments and changes they observed or envisaged. A basic journal template was provided to all the teachers, in which they indicated the entry date, student group number, and lesson or course title. They then described the procedures proposed to the students in the classroom as well as the pedagogical actions related to the strategies advocated by the RA approach. Participating teachers then had to describe their observations after classroom testing of the teaching sequence involving reading comprehension strategies. Finally, participating teachers were asked to provide reflexive feedback on the teaching sequence by specifying changes and improvements to be made for a subsequent activity incorporating reading comprehension strategies and noting their positive or negative remarks about their teaching practice in terms of their pedagogical choices and actions. In total, we analyzed 92 journal entries of the 19 participating teachers. First, we conducted a frequency analysis of the teachers' journal entries to gain preliminary insight into trends regarding the RA reading comprehension strategies incorporated by the teachers into their teaching. The analysis was performed using the QDA Miner software. Then, to analyze the teachers' reflexion (Schön, 1987; Vacher, 2011; Saint-Arnaud, 2001) on their practice of integrating reading comprehension strategies and their teaching, we performed a grounded theory analysis (Paillé & Mucchielli, 2012).

4. Results

Regarding the dimensions of the RA approach, the journals revealed the use of high-level strategies, with 10 of the 19 teachers explicitly mentioning the five reading strategies advocated by the approach. Strategies involving clarifying, summarizing, and making links—so-called high-level strategies—often appeared in the declared practices (29 journal entries). An examination of the context of use of the reading strategies shows that some teachers, depending on their needs and the difficulty of the texts and documents to be read, chose to focus on one or two strategies and to explain why, when, and how to use them. Still according to what was noted in the journals, the main criterion for the teachers using a strategy or strategies was the latter's relevance to the activity (29 journal entries). The strategy of clarifying the specific vocabulary related to the subject material was mentioned by seven teachers (13 journal entries). The teaching strategy of modeling the use of reading strategies was also mentioned by seven teachers (12 journal entries). Moreover, we noted that the integration of teacher modeling went hand in hand with the use of high-level strategies. Regarding the reflexive dimension of the journals, we noted that more than a dozen teachers reflected on the metacognitive aspects of the reading task and took more account of the process of self-regulation of their students during the task, helping their students to develop and become aware of this process through internal and external metacognitive reflexion based on annotation (talking to the text) and reflecting out load. In the journals we analyzed, the teachers also described the use of guided practice to target students' comprehension needs and more specifically their individual difficulties by

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helping them identify and find appropriate solutions to their miscomprehension. To do this, they used questioning with their students while encouraging them to use the reading strategies.

The journals also revealed that the teachers reinforced the strategies especially during interactions with the students (as a whole class), for example, if there were miscomprehensions during classroom reading the teachers made specific teaching points by connecting them to the strategies. The journals also showed that the teachers were no longer content to lecture to the whole class (transmissive approach) but that they preferred teaching in large or small collaborative groups in which the students and teacher shared their questions, ways of doing things, and clarifications, and in smaller groups with feedback from the whole class and validation from the teacher. Finally, the descriptions of teaching practices related to the RA also revealed the phenomenon of gradual release of responsibility from the teacher to the students, in 21 journal entries by 15 out of the 19 teachers (two thirds of the teachers considered). Still in the reflexive portion of the journals, more than half of the teachers said they readjusted their ways of teaching content using strategies to meet the specific needs of students through annotation or through questions and exchanges with the students during collaborative reading.

5. Conclusion

Vocational training teachers, whose specialty is to teach a trade, were able to adopt strategies for reading printed and digital texts and to integrate these strategies into their course content by making students' own comprehension visible to them through modeling and reflecting out loud. This integration also enabled the students, through a better comprehension of the texts they read, to achieve better results. Fulfilling our objective of documenting the impact of a reading comprehension approach by VT teachers, and the positive results achieved, demonstrate that it is altogether possible and beneficial for teachers to innovate in the classroom in order to improve the reading comprehension of their VT students.

References

Boud, D. (2001). « Using journal writing to enhance reflective practice », In English, L. M. and Gillen, M.A. (Eds.) *Promoting Journal Writing in Adult Education*. New Directions in Adult and Continuing Education (pp. 9-18). San Francisco: Jossey-Bass.

Deschenaux, F. (2007). «La formation professionnelle au secondaire: une voie de relégation sur le marché de l'emploi». *Observatoire jeunes et société,* 6 (4), 1-2.

Grossmann, S., Roiné, C., & Chatigny, C. (2014). « Horizons, seuils et passages. L'orientation, l'accès et le maintien des élèves en formation professionnelle à Montréal ». *Synthèse du rapport de recherche remis à Éducation Montréal.*

Hamelin, P. (2014). *Réalisation du portrait global, authentique et pratique de la formation professionnelle actuelle et récente au Québec* (Master's thesis, Université du Québec à Montréal, Québec, Canada).

Misiorowska, M. (2014). *Formation professionnelle et jeunes et adultes issus de l'immigration : état de la situation et étude exploratoire.* In Potvin, M., Arcand, S. et Audet, G. (Eds), Research Report, Commission scolaire Marguerite-Bourgeoys : Groupe de recherche immigration, équité, scolarité (GRIÉS).

Paillé, P. & Mucchielli, A. (2012). *L'analyse qualitative en sciences humaines et sociales.* Paris : Armand Colin.

Perrenoud, P. (2001). *Développer la pratique réflexive dans le métier d'enseignant : professionalisation et raison pédagogique.* Paris : ESF.

Saint-Arnaud, Y. (2001). « La réflexion-dans-l'action : un changement de paradigme », *Recherche et formation*, *36*, 17-27.

Schön, D. A. (1987). *Educating the Reflective Practitioner.* San Francisco: Jossey Bass.

Schoenbach, R., Greenleaf, C. & Murphy, L. (2012). *Reading for understanding: How Reading Apprenticeship Improves Disciplinary Learning in Secondary and College Classrooms* (2e Ed.), John Wiley & Sons.

Shanahan T. & Shanahan, C. (2008). «Teaching Disciplinary Literacy to Adolescents, Rethinking Content Area Literacy». *Harvard Educational Review, 18* (1), 40-59.

Therriault, A (1998). *L'introduction d'activités de lecture dans l'enseignement de la formation professionnelle initiale au secondaire* (Master's thesis, Université de Sherbrooke, Québec, Canada).

Tremblay, L. (2010). *Modèle d'intervention pédagogique élaboré dans le but de favoriser une bonne estime de soi chez l'élève adulte en formation professionnelle* (Master's thesis, Université du Québec à Chicoutimi, Québec, Canada).

Vacher, Y. (2011). « La pratique réflexive ». *Recherche et formation, 66.* Retrieved from http://journals.openedition.org/rechercheformation/1133.

PROFESSIONAL WELL-BEING: THE POINT OF VIEW OF PHYSICAL EDUCATION TEACHERS

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Abstract

This research project initiates an ideological and scientific shift to study and better understand the contextual, physical, psychosocial and pedagogical determinants that optimize teachers' professional well-being. Contrary to the problem-oriented scientific tradition, our study seeks to discover how a teacher can create, maintain or return to a state of professional well-being. To this end, the project proposes a research objective described as identifying teachers' representations regarding the "optimal functioning" conducive to professional well-being. First, the research protocol targets teachers in physical education, insofar as they are now recognized as leaders and models in promoting healthy lifestyles in schools and communities (MEQ, 2001). This approach allowed us to draw an integrative portrait of these teachers' professional well-being. The methodology will involve 17 focus groups consisting of 136 teachers. Based on the findings, we are able 1) to propose a model describing a four-zone trajectory for teachers' professional well-being, 2) to identify the contextual, psychosociological, physical and pedagogical determinants that optimize professional teachers' well-being, and 3) to propose methods and tools promoting knowledge transfer to practitioners and decision-making stakeholders. Through this unprecedented approach, we hope to enhance the value of the profession, foster the pursuit of professional careers and the motivation of teachers and thereby promote the educational success of students.

Keywords: Professional well-being, teacher education, physical education, focus group.

1. Introduction and objectives

This research project was designed in response to a state of ill-being in the teaching profession that has been reported on for many years (Harris, 2015, Tardif, 2014). Efforts to understand this problematic situation, however, lead us to believe that a better manner of dealing with it is to concentrate on teachers' well-being and how to achieve it (Goyette 2014, Théorêt and Leroux 2014). Professional well-being is understood as an individual's optimal functioning in terms of realizing or actualizing their potential, motivated by their self-determination, and resulting in a sense of accomplishment, pleasure and happiness. This inspiring ideological shift is a contemporary orientation centered on concepts such as pleasure (Brassell, 2015), passion (Brunelle and Brunelle, 2012), recognition of the profession (Fédération des syndicats de l'eneignement, 2013; Gouvernement du Québec, 2015), leadership (Wilmore, 2008), and the search for optimal experience (Csikszentmihalyi, 2008). These concepts are geared towards accomplishment, pleasure and happiness.

In short, the teaching profession is in need of restorative and constructive knowledge regarding well-being (Goyette, 2014). To increase understanding and improve teachers' well-being, it seems logical and necessary to examine the situation, identify the determinants of optimal functioning, study them, validate them and convey them to the community in order to promote well-being in teaching and reduce dropout.

To investigate the issue, we questioned teachers' about their well-being and the processes leading to its attainment. The research question was: How can a state of professional well-being be created, maintained or restored? This led to two sub-questions: 1) What is the current state of professional well-being for teachers in the province of Quebec? 2) What are the most influential determinants of professional well-being for these teachers? The specific objective of this presentation is to identify

teachers' representation and experience in regard to "optimal functioning" in relation to professional well-being.

2. Conceptual framework

This project is a pioneer in its philosophical and methodological approach. In contrast to the problem-oriented scientific tradition, we are initiating a shift in educational research through a "salutogenic" reorientation that has proved beneficial in medical research (Lindström and Eriksson, 2010). The salutogenic theory does not rely on problem identification; instead, it enables a better understanding of the source of success and the means to achieve it. It is a bold epistemological position that offers a constructive angle for proposing educational and flexible means of action that teachers can implement and adapt. The Ministry of Health and Social Services [MSSS] (2010) employed the salutogenic theory to develop an ecological conceptual framework identifying the determinants of health. This framework offers interesting elements to effectively explore teachers' professional well-being. To this end, our project studies the subject from four angles: 1) context, 2) physical fitness, 3) mental and psychosocial state, and 4) pedagogical practices that optimize the professional well-being of teachers and students.

3. Methods

We began our first phase by focusing on physical education (PE) teachers because they are health leaders in the teaching community and will then turn our attention to the other teachers. Focus groups were conducted since teachers' support and collaboration are essential for optimizing the understanding, mobilization and transfer of knowledge (Stoloff, Boulanger, Roy and Rivard, 2016). We chose this method because it gathers information on their experience, opinions and apprehensions (Van der Maren, 2010) on the basis of a focused discussion and a collective reflection. To initiate a structured exchange, the first phase involved 37 teachers (n = 5x8) divided into 5 focus groups in 5 regions of Quebec province, ensuring valid maintenance conditions (Barbour and Kitzinger, 1999). The focus groups were oriented on teachers' representations, indicators and strategies to create, maintain and restore a state of well-being. Participants were recruited thanks to different partnerships. They each set up in elementary and secondary public schools across Québec, totalling over 7 hours of discussion with PE teachers, 125 pages of transcription were subsequently analyzed. The content analysis was conducted according to themes (Paillé and Mucchielli, 2008) and using *NVivo10* software. This process combines emerging themes associated with categories in the MSSS Health model. Intercoder reliability was 92% of the initial coding (Deslauriers, 1991); inconsistencies were then recoded until an intercoder agreement was reached.

4. Findings and discussion

Four determinants emerge from the group interviews. The first dimension regards the relationship to students, which includes the quality of the relationship, learning and transfer. Students are considered to play a key role in a teacher's well-being since they are the reason teachers choose education. This category is associated with the psychosocial and pedagogical determinant from the MSSS Health model. The results offer an interesting interpretation in terms of attachment theory (Neufeld et Maté, 2005) and the importance of student success as a reward for teachers (Wilmore, 2007).

The second dimension involves the relationship with colleagues; it includes quality of relationship, collaboration and encouragement. Colleagues consist of co-teachers, the administration and the school director. They are viewed as a team, in which everyone works together for the students' benefit. Here again, this category is associated with the psychosocial determinant from the MSSS Health model. These results offer a range of attitudes and behaviors conducive to a common vision and the development of pedagogical or educational projects within the school. Among this team of colleagues, the school director plays a key role in creating a range of opportunities. These findings contrast with the research on ill-being, in which each professional sector is considered independently with its own specific issues and irritants (Karsenti et al., 2013).

The third dimension refers to a teacher's vitality - affective, mental and physical. All three aspects are presented positively, creatively and enthusiastically, and even problems are approached from a "solution-finding" perspective rather than a "problem-solving" one. This category is associated with the psychological and physical determinants of the MSSS Health model. The results suggest that teachers' professional well-being depends on the feelings of success, accomplishment and security that inspire creativity, innovation and experimentation.

The fourth dimension, finally, concerns time, expressed by a loss of temporality. Teachers describe feeling a certain unawareness of time going by. This sense of immersion in the day's teaching, lessons, work tasks, etc. exemplifies the concept of flow (Csikszentmihalyi, 2008). Paradoxically, however, teachers also speak of "controlling time." When confronted with a difficult situation they take control by stepping back, reflecting, and identifying the best alternative.

5. Conclusion and acknowledgements

Given the results, it is fair to say that the determinants of well-being identified by teachers differ from those concerning ill-being. In consequence, they point to specific strategies to create, maintain and restore a state of well-being. It's clear that the differences are significant enough to justify new avenues in training and research. In concrete terms, this integrative research contributes to knowledge in the field by advancing research in education through an avenue of investigation that reverses the focus on ill-being and, in doing so, sheds new light on a situation of current concern.

References

Barbour, S. et Kitzinger, J. (1999). *Developing focus group research: Politics, theory, and practice*. London: Sage publications.

Brassell, D. (2015). *Cultiver le plaisir d'enseigner*. Montréal : Chenelière Éducation.

Brunelle, J-P. et Brunelle, J. (2012). *Susciter la passion pour les activités physiques et sportives*. Sherbrooke : Philia.

Csikszentmihalyi, M. (2008). *Flow: The psychology of optimal experience*. New York : Harper perennial.

Deslauriers, J-P. (1991). *Recherche qualitative: Guide pratique*. Montréal: McGraw

Fédération des syndicats de l'enseignement [FSE]. 2013. *Vie professionnelle : Valorisation de la profession enseignante*. Accessible à l'adresse URL suivante http://fse.qc.net/vie-professionnelle/valorisation-de-la-profession-enseignante/ Consulté le 22 juin 2015.

Gouvernement du Québec. (2015). *Enseigner au Québec : Valorisation de la profession enseignante*. Accessible à l'adresse URL suivante http://www.education.gouv.qc.ca/enseignants/enseigner-au-quebec/valorisation-de-la-profession-enseignante/ Consulté le 22 juin 2015.

Goyette, N. (2014). *Le bien-être dans l'enseignement : étude des forces de caractère chez des enseignants persévérants du primaire et du secondaire dans une approche axée sur la psychologie positive*. Thèse de doctorat. Université du Québec à Trois-Rivières (Trois-Rivières).

Harris, D. (2015). *Cultiver le plaisir d'enseigner*. Montréal: Chenelière.

Hillier, A. (2007). Why social work needs mapping. *Journal of social work education, 43*(2), 205-221.

Karsenti, T., Collin, S. et Dumouchel, G. (2013). Le décrochage enseignant: état des connaissances. *International Review of Education, 59*(5), 549-568.

Lindström, B. et Eriksson, M. (2010). *The hitchhiker's guide to salutogenesis: Salutogenic pathways to health promotion*. Adaptation française de M. Roy et M. O'Neill, La salutogénèse : Petit guide pour promouvoir la santé. Helsinki : Folkhälsan Research Center.

Ministère de l'Éducation du Québec [MEQ]. (2001). *Programme de formation de l'école québécoise. Éducation préscolaire, enseignement primaire*. Québec : Gouvernement du Québec.

Ministère de la Santé et des Services Sociaux [MSSS]. (2010). *Cadre conceptuel de la santé et de ses déterminants : Résultats d'une réflexion commune*. Québec : Gouvernement du Québec.

Neufeld, G. et Maté, G. (2005). *Hold on to your kids*. New York: Ballantine Books.

Paillé, P. et Mucchielli, A. (2008). *L'analyse qualitative en sciences humaines et sociales*. Paris: Armand Colin.

Stoloff, S., Boulanger, M., Roy, V. et Rivard, M-C. (2015). Sensitization sessions as the foundations for training transformation activities. *Journal of education and learning, 4*(3), 146-154.

Tardif, M. (2014). *La condition enseignante au Québec du XIXe au XXIe siècle. Une histoire cousue de fils rouges: précarité, injustice et déclin de l'école publique*. Québec, Québec : PUL.

Théorêt, M. et Leroux, M. (2014). *Comment améliorer le bien-être et la santé des enseignants? Des ressources pour la résilience éducationnelle*. Louvain-la-Neuve, Belgique : De Boeck.

Van der Maren, J-M. (2010). La maquette d'un entretien. Son importance dans le bon déroulement de l'entretien et dans la collecte de données de qualité. *Recherches Qualitatives, 29*(1), 129-139.

Wilmore, E.L. (2007). *Teacher leadership*. Thousand Oaks : Corwin Press.

A STUDY OF VOCABULARY LEARNING STRATEGIES USED BY HIGH AND LOW PROFICIENCY EFL LEARNERS

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Abstract

The study aims to investigate the most and least frequently used vocabulary learning strategies by high and low proficiency EFL learners and to find out a relationship between EFL learners' proficiency levels and their use of vocabulary learning strategies. The subjects were 60 randomly selected first-year students from Chulalongkorn University. They were divided into two groups based on several scores. Both groups were determined by their scores of at or above 1 SD and below -1 SD. The instrument validated by three experts was a 25-item questionnaire adapted from Schmitt's Taxonomy. The questionnaire was tried out with a comparable group as a pilot survey to evaluate its reliability. Descriptive statistics and Independent t-test were used to analyse the data.

The results showed that in both groups, determination was the most widely used strategy. The strategy used the least by the high group was the cognitive strategy while memory strategy belonged to the low proficiency group. Furthermore, regarding strategies, watching and listening English language media, such as songs, movies, and even news was the most frequently used strategy by high proficiency learners. In contrast, using a bilingual dictionary was the most often used by low proficiency learners. The study also found that the use of lexicon learning strategies did not have much significant difference between the high and low proficiency groups except for certain strategies such as watching and listening English language media.

Keywords: Vocabulary learning strategy, proficiency, EFL learners.

1. Introduction

English, nowadays, is one of the most important subjects for Thai students because they can use not only in university entrance examinations but also in their careers. Saenmanot (2013) also believed that many people in the present day have learned English due to more chance to get a better job and more education.Students must also pay more attention to several dimensions of language knowledge in order that they can reach a high degree of competence in English (Riankamol, 2008). Moreover, these students have own different ways to develop their English skills, including reading, writing, speaking, and even listening. However, learners are different in terms of not only language skills but considerable factors affecting language learning proficiency, including learning styles, teaching styles, and students' background. Furthermore, one of the most difficult obstructs of unsuccessful English improvement is that students lack vocabulary knowledge which can have an effect on students' reading comprehension. Since vocabulary is the primary importance for the learners who want to learn the language and is considered as an important background of non-native learners who learn English as a second language (Aneklaphakij, 2013). Similarly, regarding Riankamol (2008), one of the most important aspects is vocabulary playing a big role in English learners' comprehension, and Schmitt (1997) pointed out that vocabulary learning has been considered as one of the most essential parts in a second or foreign language acquisition. If without having an access to a range of vocabulary, students will not be able to communicate and express their thought about subject matters or actions as well. Therefore, vocabulary learning strategies are for foreign learners very crucial. For this reason above, it is important to be aware of the vocabulary learning strategies and how learners employ these strategies effectively. The principal purpose of this study is to investigate the most and least frequently used vocabulary learning strategies by high and low proficiency EFL learners and to find out a relationship between EFL learners' proficiency levels and their use of vocabulary learning strategies in order to understand their learning process and further provide activities with effective vocabulary learning strategies to suit them.

2. Methodology

2.1. Population and sample

The population was 5,292 first-year students from all faculties in Chulalongkorn University in the first semester academic year 2015. The subjects were 60 randomly selected first-year students from Chulalongkorn University in 2015. The students were divided into two groups based on CUTEP's score, CUTEP reading's score, GAT, and their scores on the mid-term exam. The high English proficiency groups were determined by their scores of at or above 1 SD whereas the low English proficiency groups were determined at or below -1 SD in order to make sure that these two groups possessed different English proficiency level. There were 30 high proficiency students and 30 low proficiency students.

2.2. Instrument

The method employed to collect data in this study was a survey. The instrument was a 25-item questionnaire adapted from Schmitt's Taxonomy, including five different lexical learning strategies. The questionnaire was based on Schmitt's taxonomy for vocabulary learning strategies because it was one of the most comprehensive lists of strategies and it match with the purpose of the study. However, there were some adaptations made in order to suit the subjects' background knowledge, competence level, and learning environment. There are two versions of questionnaire: Thai and English languages to avoid misinterpretations. Then the questionnaire was validated by three experts to assure face validity and construct validity, and the result from IOC form for evaluating questionnaire questions was above 0.6666 of all items which meant all of questions were reliable to employ in this study. Afterwards, the questionnaire was tried out with a comparable group of 22 EFL learners as a pilot survey, and Cronbach Alpha was employed to evaluate its reliability, showing a high reliability of 0.873.

3. Results

Table 1. Vocabulary learning strategies.

No	Strategy Category	Proficiency groups						t_{calc}	P-value Sig. (2-tailed)
		High			Low				
		Mean score	S.D	Rank	Rank	Mean score	S.D		
1	Determination	3.6670	0.59500	1	1	3.3467	0.4663	2.318	0.024*
2	Social	3.0133	0.85810	2	3	3.1800	0.70535	-0.822	0.415
3	Memory	2.7000	0.80985	3	4	2.5600	0.76366	0.689	0.494
4	Cognitive	2.3867	0.93504	4	5	2.6500	0.77797	-1.141	0.259
5	Metacognitive	3.4067	0.47701	5	2	2.9800	0.64402	2.916	0.005*

The table shows the overview of the strategies respondents using to learn new words. It is found that in both the high and the low proficiency groups, determination was the most widely used strategy with the mean score of 3.6670 and 3.3467 respectively. Also, there was a significant difference in the T-test values from both proficiency groups. The metacognitive strategy was the least used by the high proficiency group with the mean score of 3.4067, but it was used less in the low proficiency group with the mean score of 2.9800. The T-test value for this category was 2.916 (p-value 0.005) indicating a huge difference in the usage of this strategy. Moreover, the strategy the least frequently used by the low proficiency group was the cognitive strategy with the mean score of 2.56000.

However, both groups did not use the cognitive strategy as can be seen in the high proficiency group (items 20, 17, and19 which had mean scores of 2.3667, 2.2667, and 1.5, respectively). The evidence from the low proficiency group was the scores of items17anditem 19 with the mean scores of 2.3333 and 1.8333 respectively). It's notable that both groups rarely used item 19 "I put English labels on real objects," which received a mean score of only 1.5 from the high proficiency group and 1.8333 from the low proficiency group.

4. Discussion and conclusions

1. Overall, when the mean scores in each of the strategies were compared, it was found that the group of higher proficiency learners employed determination, metacognitive, cognitive strategies, which was similar to the results found in Aneklaphakij (2013) and Jafari and Kafipour (2013). In the latter study, it was found that determination strategies were used highly by the high proficiency students while social and memory strategies were employed highly by the low proficient group. This is probably because the learners who had high proficiency English often like to learn vocabulary through tasks or worksheets.

Meanwhile, learners with low proficiency level of English tend to learn via easier way such as asking others.

2. In view of the strategy that was the most frequently used in the group of high proficiency learners, the findings showed that determination and metacognitive were the most used vocabulary learning strategies. That means these groups preferred to learn vocabulary through activities requiring critical thinking such as finding the meaning of word from textual context or analyzing from prefix, suffix and root in order to know how to use word correctly and properly. This is in accordance with the results of Jafariand and Kafipour (2013) who found out that advanced learners had a strong tendency toward using determination techniques because of their sufficient knowledge of English and better English comprehension. Therefore, they want to acquire more vocabulary to understand meanings of word and convey their thoughts to other people effectively (Aneklaphakij, 2013). Also, learning through English media such as watching television, listening to music can help them memorize vocabulary as well. In addition, Riankamol (2008) also supported that high proficiency learners tended to learn under their interest and seemed to enjoy learning English from real experiences like listening to English songs or watching English movies; therefore learners could make sustainable progress in English with pleasure and without any pressure. In contrast, the low proficiency group of learners is most likely to choose to learn the vocabulary through asking their friends. This may be because it is convenient to have a definition of word suddenly. This finding supported Jafariand and Kafipour (2013) who claimed that learners might find it easier to communicate with their teachers or classmates to ask for the meaning of a word.

In terms of the least used vocabulary learning strategies, the high proficiency groups of students rarely use were cognitive and memory strategies such as using a flash card, writing initial letter of new word, putting label on object, or even using picture in book to find the meaning of word which is found in the low proficiencygroups of students. This is probably because it does not make it harder to pay attention. Riankamol (2008) claimed that the high proficiency learners will not learn without interest and motivation. Saenmanot (2013) also gave some reasons that using flash cards was the old-fashioned way because modern technology at present is growing very fast and learners can use their smart phones, tablets, and other devices to access the internet and self-learning. On the contrary, the low groups of students would not presumably learn the vocabulary from testing themselves with vocabulary worksheet or even creating a storyline with new words. This may be because the task is too difficult for them.

3. The study revealed that the high and low proficiency groups did not show a significant difference in using most vocabulary learning strategies except for only certain strategies. From T-value, it was found that learners who have high proficiency English levels prefer to learn vocabulary through analyzing parts of speech, analysing root, prefix, and suffix, or even learning the meaning of word with using textual context. The most significant difference when compared with low proficiency level group was that learning vocabulary through English language media is used dramatically by the high proficiency group of learners. This is similar to the study of Aneklaphakij (2013) who found out using English media was the most used strategy by most of MEC students at Thammasat University, and this is probably because they do what they like and because media makes them curious with a new word when encountering. Meanwhile, the learners with low proficiency English level were likely to learn vocabulary through asking friends or classmates. Similarly, Jafariand and Kafipour (2013) reported that the learners with low proficiency level used social strategies more frequently. Perhaps, it might be because it is easy for them to know the meaning of words and is convenient.

References

Aneklaphakij, S.) 2013 .(A Survey Study of Common Use of English Vocabulary Learning Strategies Among MEC Students at Thammasat University. *International Graduate Conference Proceedings by LITU Volume 2, Issue 1*, 11-24

Jafari, S. & Kafipour, R.) 2013 .(An Investigation of Vocabulary Learning Strategies by Iranian EFL Students in Different Proficiency Levels. *International Journal of Applied Linguistics & English Literature, Vol. 2No. 6*, 6-23.

Riankamol, N.) 2008 .(A survey study of vocabulary learning strategies of gifted English students at Triam Udomsuksa School in the first semester of academic year .2008Bangkok, Thailand: Language Institute, Thammasat University.

Saenmanot, N. (2013). A survey study of vocabulary learning strategies and factors supporting the word building of M.3 students at Pathumthep Wittayakarn School, Nong Khai Province. Language Institute, Thammasat University, 2013.

Schmitt, N.) 1997 .(Vocabulary learning strategies. *Vocabulary: Description, Acquisition and Pedagogy)* pages 199 -227(. Cambridge: Cambridge University Press.

CLASSROOM MANAGEMENT IN PHYSICAL EDUCATION: WHAT AND HOW?

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Abstract

In the wake of the 2001 school reform in Québec (MEQ, 2001), teaching practices changed significantly (Stoloff, 2016). During the past decade, teachers have struggled to adapt to the new orientations, particularly as regards the educational approach promoting student responsibility and the effects on classroom management (Archambault and Chouinard, 2009). In physical education and health (PE), a complex discipline with varied environments, few studies have examined the appropriate practices to adopt. This project aims to better define current practice and help PE teachers improve the quality of their "classroom management". Three research objectives were formulated as follows: (1) draw a picture of stated practices, (2) document the relationship between teachers' beliefs and practices, and (3) describe the variables that apparently affect the type of practice. The methodology was based on the Q-PEPS questionnaire (Couturier Cormier, 2017), which comprises three sections: sociodemographic characteristics (8 items); beliefs (8 items); and instructional practices (43 items). A sample of 328 respondents (205 men, 123 women, age = 41.3 ± 9.4 years) enabled confirmatory factor analyses. The findings describe 1) a new model composed of four descriptive components detailing classroom management practice during PE lessons: latitude, ambiance, learning situations and assessment; 2) distinct categories of belief and associated practices; and 3) the sociodemographic variables that affect practices.

Keywords: Classroom management questionnaire, physical education teachers, beliefs, practice.

1. Introduction

Teachers play a vital role in our society because they educate future generations. For physical education (PE) teachers in particular, responsibility is increasing at a time when public health is critical and drawing the concern of public health institutions. Although they are key actors in our society, however, teachers believe the public views them less favourably, and the profession is no longer as attractive as before (Bizet, Laurencelle, Lemoyne, Larouche and Trudeau, 2010). As health models, studies have shown decline in teachers' health during the past ten years. Consequently, many leave the profession at the start of their career (Sauvé, 2012). Others experience the effects of burnout (Dionne-Proulx, 1995).

The reason for this phenomenon apparently lies, among other things, in teachers' difficult relationships with their students (Gaudreau, Royer, Beaumont and Frenette, 2012). These difficult relationships then have a major impact on classroom management, which also seems to be a key factor in their growing difficulties, specifically for PE teachers in their complex context. Hence, PE teachers have the added difficulty of managing space and transitions (Sanderson, Heckaman, Ernest, Johnson and Raab, 2013).

In parallel, the education reform implemented in Québec in 2001 changed classroom management significantly by placing students at the center of the learning process (Archambault and Chouinard, 2016). This shift required teachers to adapt their approach to the new educational orientations, which were henceforth focused on empowering students through responsibility. The question now is: What classroom management practices do PE teachers implement?

2. Conceptual framework

2.1. Personal and social responsibility

Responsibility allows students to reflect on their choices, make decisions and adopt appropriate behaviors based on the decisions made (Gordon, 2010; Hellison, 2011). In an accountability approach, conditions increase students' motivation and engagement in the classroom (Archambault & Chouinard, 2016). Students are given the opportunity to make more choices, and acquire gradually greater decision-making power.

2.2. CLASSE model

The CLASSE teaching intervention model offers a comprehensive-interpretative framework of teaching practices through six categories (Archambault and Chouinard, 2016). The word "CLASSE" is the French acronym for belief (C), latitude (L), atmosphere (A), learning situations (S), support (S) and evaluation (E). This model offers a broad understanding of classroom management and has proven effective for research in a physical education context (Stoloff, 2016).

3. Methods

A sample of 328 Quebec PE teachers responded to the Q-PEPS questionnaire (Couturier Cormier, 2017). The questionnaire is composed of three sections: sociodemographic characteristics (8 items), beliefs (8 items), and teaching practices (43 items). Of the 328 forms collected, 281 are complete. Confirmatory factor analyses (CFAs) were conducted to verify the quality of fit for the proposed model. The sample consisted of 37.5% women (N = 123), and 62.5% men (N = 205). Of the respondents, 73.2% were primary school teachers (N = 240), and 26.8% were secondary school teachers. The average age was 41.3 ± 9.4 years.

4. Findings and conclusion

The model created for the Q-PEPS questionnaire includes four descriptive components detailing classroom management practice during PE lessons: latitude, ambiance, learning situations and assessment.

Findings reveal that teachers tend to have same beliefs regarding PE (70%) but differ on matters related to fundamentals. Also, results present a high level of latitude given to students during activities, yet a punitive approach is used for misbehavior. Finally, assessment is the category with the biggest difference in practice and is most affected by sociodemographic variables.

Four sociodemographic variables affect practice : teaching level, gender, experience and socioeconomic context. These variables have significant impact on beliefs and practice used by PE teachers

References

Archambault, J. & Chouinard, R. (2016). *Vers une gestion éducative de la classe* (4e éd.). Québec, Montréal: Chenelière Éducation.

Bizet, I., Laurencelle, L., Lemoyne, J., Larouche, R. & Trudeau, F. (2010). Career changes among physical educators: searching for new goals or escaping a heavy task load? *Research Quarterly for Exercise & Sport, 81*(2), 224-232.

Couturier Cormier, J-C. (2017). *Élaboration et validation du questionnaire q-peps sur les pratiques de gestion de classe en éducation physique et à la santé*. Mémoire de maitrise, Université du Québec à Trois-Rivières, Trois-Rivières.

Dionne-Proulx, J. (1995). Le stress au travail et ses conséquences potentielles à long terme: le cas des enseignants québécois. *Revue canadienne de l'éducation, 20*(2), 146-155.

Gaudreau, N., Royer, É., Beaumont, C. & Frenette, É. (2012). Gestion positive des situations de classe: un modèle de formation en cours d'emploi pour aider les enseignants du primaire à prévenir les comportements difficiles des élèves. *Enfance en difficulté, 1*, 85-115.

Gordon, B. (2010). An examination of the responsibility model in a New Zealand secondary school physical education program. *Journal of Teaching in Physical Education, 29*(1), 21-37.

Hellison, D. (2011). *Teaching personal and social responsibility through physical activity*. Champaign: Human Kinetics.

Ministère de l'Éducation du Québec (MEQ). (2001). *Programme de formation de l'école québécoise. Éducation préscolaire et enseignement primaire*. Québec : Ministère de l'éducation.

Sanderson, S., Heckaman, K. A., Ernest, J. M., Johnson, S. & Raab, S. (2013). Strategies for maintaining appropriate behavior in inclusive physical education settings. *Strategies (08924562), 26*(1), 20-25.

Sauvé, F. (2012). *Analyse de l'attrition des enseignants au Québec* (Mémoire de maîtrise, Université de Montréal, Montréal).

Stoloff, S. (2016). Pour une gestion éducative du groupe-classe en éducation physique et à la santé. Dans B. Lenzen, D. Deriaz, B. Poussin, H. Dénervaud et A. Cordoba (dir.), *Temps, temporalités et intervention en EPS et en sport*, (p.73-92). Bruxelles : Peter Lang.

SCHOOL GARDENING AS SCHOOL COMMUNITY ENGAGEMENT AND ACADEMIC SERVICE LEARNING PROJECT

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Abstract

The purpose of this study was to review school garden projects that have been implemented in a school district in the U.S.A. as a part of school community engagement and academic service-learning projects. This study was to describe how school farms or school gardens started and developed in the U.S.A. through a review of a wide range of empirical research studies on school gardens. Most of the school gardens were for students to adapt their learnings in the classroom and apply knowledge in practices. Through school gardening projects, teachers and school staff provided opportunities community members with less expensive vegetables and plants, which is beneficial to students who live in the area of fresh food shortage. In addition, school gardens were used for educating school children and their families, preventing illness, and promoting public health. Students could learn about nutrition and adapt what they learned in the classroom to the real world. School gardening was found to be good for students' mental health through physical activities. Students can obtain academic credits as a part of academic service-learning as well. Parents and school community members can have opportunities to participated in school activities. Implications that how school gardens and farms can be applied in Korea and other countries are suggested.

Keywords: School gardens, school community engagement, academic service-learning.

1. Introduction

Service learning can be defined as an academic course-based educational experience that students can obtain credits through by participating in service activities based on community needs as well as academic goals. Service learning can enhance students' learning by engaging in and reflecting on service activities, which can lead to deeper understanding of academic course content, community issues, and students themselves (Bringle, & Hatcher, 2000). According to the Kolb's experiential learning theory, students can engage in deeper learning by planning, doing, observing, and reflecting/thinking (Kolb, 1984). Academic service learning activities can provide students with experiential learning opportunities. Key components of service-learning include relevant service to course content, academic material, critical reflection, and reciprocity. In addition, schools and community can collaborate to form sound school community through academic service learning projects. School gardens can be used to provide students, teachers, parents, and families in school communities with opportunities of physical activities which can be beneficial to emotional and physical well beings (Braastad & Hauge, 2007; Flick, 2012) as well as opportunities to learn about plants and nutrition.

2. Objectives

This study focused school garden projects that have been implemented in a school district in the U.S. as a part of school community engagement and academic service-learning projects.

3. Methods

Researchers reviewed school garden projects in the U.S. Literature was also reviewed how school gardens were implemented and what benefits were found through school garden activities.

4. Conclusions and discussion

School gardens as well as community gardens were very popular in the U.S. Students, teachers, parents, and families collaborated to keep school gardens. Through school gardening activities, students can receive parts of credits. Students can participate in selling new sprouts and harvesting vegetables. Students can learn how to grow fresh vegetables and flowers. They also learn about nutrition, chemicals, and cycles of farming. Also, parents and families can socialize and collaborate through activities related to school gardening. Benefits of school gardens can be more utilized in K-16 school settings and communities.

References

Braastad, B. O., & Hauge, H. (2007). Book of abstracts of the COST Action 866 conference. Green care in agriculture: Health effects, economics and policies. Norwegian University of Life Sciences Pub.

Bringle, R. G., & Hatcher, J. A. (2000). Institutionalization of service learning in higher education. *Journal of Higher Education, 71*(3), 273–291.

Flick, K. M. (2012). The application of a horticultural therapy program for preschool children with autism spectrum disorder. *Journal of Therapeutic Horticulture, 22*(1):38-45.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

"LAYERED LEARNING" IN INTER-PROFESSIONAL EDUCATION: THROUGH THE LENS OF STUDENT FILMMAKING

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Abstract

This presentation examines pre-service teacher education within the context of "layered learning", a pedagogical design principle developed to support multiple and diverse learning outcomes within a single learning activity. Typically, individual student learning is the focus of analysis. However, this research highlights the process of inter-professional collaboration when pre-service teachers and human services professionals (preparing to work with youth and families in community-based agencies) collaborate to support each other and contribute to student's academic and social-emotional learning outcomes in a classroom setting. Participants included a class of eleven students attending an alternative high school in the United States, their principal, two university faculty ten pre-service professionals enrolled in either a teacher education or human services professional degree program and a filmmaker. High school participants spent 8-weeks (15-sessions) producing films about student engagement and learning at their school following the theme of "making learning visible". Planning, filmmaking and debrief sessions were recorded and transcribed. Results of qualitative analyses presented here focus on inter-professional discourse tied to planning for and implementing layered learning, student engagement during the course of the filmmaking process and instances of cross-professional learning resulting from this experience. Results are presented in the context of designing new models of teacher education that support layered learning and the development of collaborative and reflective inter-professional practitioners.

Keywords: Filmmaking, human services, inter-professional, pedagogy, pre-professional.

1. Introduction

Teacher education in the United States is in crisis.

- Enrollment in U.S. teacher preparation programs is down 35% over the past five years, and experienced teachers are resigning and retiring at rates that far outpace replacement needs.
- Only 4% of the nearly two million U.S. high school students who took the ACT in 2015 indicated an interest in becoming a teacher (ACT, 2015).
- Recruiting and retaining U.S. teachers from racially, ethnically and linguistically diverse backgrounds is a major challenge, with only one in thirty-three U.S. classrooms led by a non-white teacher (Toppo & Nichols, 2017).

University students are looking for ways to make meaningful differences involving development, advocacy and systems change, but many do not see teaching as viable in this regard. In one U.S.survey where respondents ranked 14 professions, teaching ranked last on attributes such as "opinions seem to count" and "an environment that is trusting and open." (Strauss, 2015). The project presented here offers one response to teacher education re-design by emphasizing opportunities for pre-service teachers to learn alongside human services pre-professionals who are preparing to work with youth and families in community-based social service agencies. The objective of this project was for pre-professionals to collaborate in the practice of "layered learning" a pedagogical design principle developed to support multiple and diverse learning outcomes within a single learning activity. While not previously studied, layered learning is designed to support student's academic and social-emotional learning outcomes in a classroom setting through engagement with youth and an inter-professional team.

This project was designed as a pilot study to explore the potential for re-designing the teacher education practicum experience. It is part of a multi-year college of education initiative developed to prepare a diverse group of future teachers and human services professionals to:

- Transform schools into justice producing institutions by having a critical lens, systems-focus, and transdisciplinary emphasis.

- Create the conditions in the college of education and in specific courses for students to see teacher education as a place to understand and apply issues related to transforming schools.
- Use processes that cultivate educational success through authentic relationships that focus on talking and engaging with, not just talking about community, families, and professionals in schools (Steinert, 2005).

Given the exploratory nature of this work, the goal was to use action research to capture as many interactions as possible related to layered learning, with no pre-conceived expectations or hypotheses during this first iteration of the model..

2. Methods

2.1. Participants

Participants included a class of eleven high school students attending an alternative school in the United States, their principal, two university faculty ten pre-service professionals enrolled in either a teacher education or human services B.A. degree program and a professional filmmaker.

2.2. Procedure

High school participants spent 8-weeks (15 sessions) producing digital stories about student engagement and learning at their school. Digital storytelling allowed pre-service professionals to "hear" students' metacognitive voices, since high school students were working to identify where learning and engagement is demonstrated and capture it (Vasudevan & Dijaynes, 2013). Digital storytelling is intrinsically inter-professional (allowing pre-service teachers and human services professionals to work alongside high school students, practicing teachers and administrators. At any given time one or two cameras filmed classroom discussions and workflow, while five teams (comprised of the high school youth and university students) engaged in digital storymaking. The teams were encouraged to film as much of their planning and production process as possible. Sometimes they elected to leave their cameras on for this purpose, while other times they decided to keep their work private.

Films focused on the topic of "making learning visible", with the academic objective of helping high school students consider and capture on film when, where and how learning takes place at their school. One way human services students and faculty contributed to layered learning was by helping the high school students develop and practice professional interviewing and questioning skills (e.g. active listening, summarizing, paraphrasing, reflection, varying questioning styles) that were later used when youth filmed interviews with teachers, administrators and peers. Human services students also helped youth negotiate conflict and work through resistance over the course of the 8-week project. Pre-professional teachers contributed to layered learning by helping the high school students understand and identify math, science, language arts and social studies learning outcomes. The high school students then interviewed teachers and peers and filmed classroom activities that highlighted when, where and how learning was taking place (or not taking place) at school. The professional filmmaker taught film and editing techniques. Before and after each session university students and faculty met with the school principal to plan and debrief on the day's activities. At the end of the project youth screened their in-progress and completed films for teacher education and human services faculty, students and administrators at a nearby university. Planning, teaching and debriefing sessions were transcribed

3. Results

While one of the primary goals of this model of inter-professional pre-service education was to attract and develop a teaching force able to engage students in multiple ways, a key finding from this work is that pre-service teachers began to question their future as teachers during the course of this project. In contrast, the human services students remained fully invested in their profession, and are now (post-graduation) all working with youth and families in community based settings. Ultimately, three of the five pre-service teachers made the decision to move into work aligned with the human services profession following graduation. Their involvement in supporting student's social and emotional development compelled these students to re-think their vocation. While a few of these life-changing conversations were captured on film, most of the time discussions took place with each other, away from the school administrator and university instructor. While pre-service teachers participated in layered learning during this project, they viewed it as necessarily but not a practice they were equipped to engage in as a teacher in the future.

Another key finding from this work is that it was not only pre-service teachers and human services professionals who were engaged in layered learning, the high school students were also able to see the connections between the two pre-professional skill-sets and began to engage professionally in the

academic and the human services realm simultaneously. Thus, layered learning was not only a pedagogical tool for pre-professional education, it became an efficient way for the high school students to engage in the filmmaking process. As visualized in Figure 1, both pre-service teachers and high school youth learned and practiced professional interviewing skills that may carry forward, along with academic skills, post graduation. Likewise, during this project high school students and pre-professional teachers and human services students gained insights together into the factors associated with student learning and engagement and considered ways to re-design education to support layered learning in instances when students are bored or dis-engaged (see Figure 2). Students later shared these ideas with university professors, students and administrators in teacher education and human services.

Figure 1. Pre-service teachers and youth.   *Figure 2. Student identified examples of engagement (or not).*

3.1. Conclusions

Initial results of this pilot project suggest that university students who are preparing to work as teachers or as human services professionals can benefit from inter-professional learning opportunities, despite some unintended consequences. Layered learning offers one possibility for supporting student's complex academic and socio-emotional needs. A strength of this project is that students, educators and an administrator engaged in layered learning by sharing their knowledge and expertise with one another. The activity of filmmaking was unique in that it was engaging (and sometimes frustrating) for everyone involved. The adults did not have any special expertise with the learning activity, and that contributed to a limitation of the work. There were a disproportionate number of adults in the classroom, out-numbering the high school students. Future research might consider other pre-service models of inter-professional learning involving one team at a time within a given classroom. Research might also examine the process of instructional planning and evaluation as it relates to layered learning involving school principal, teachers and university instructors. Despite the attrition noted here, with additional research, the innovation of layered learning in pre-professional education may prove to be a valuable way for colleges of education to equip future teachers with skills to work collaboratively to support student's academic and socio-emotional needs.

References

ACT (2015). Interest in Becoming a Teacher Continues to Decline Among High School Graduates. http://www.act.org/content/act/en/newsroom/interest-in-becoming-a-teacher-continues-to-decline-among-hs-grads.html. Retrieved April 4, 2018.

Sheppard, J. (2010). Developing multimodal literacy: The role of collaboration and constraints in the design of new media assignments. *Journal of Literacy and Technology, 11*(1), 43-55.

Soep, E. & Chavez, V. (2005). Youth radio and the pedagogy of collegiality. *Harvard Educational Review,* 75(4), 409-434.

Steinert, Y. (2005). Learning together to teach together: Interprofessional education and faculty development. *Journal of Interprofessional Care, 19*(1), 16-75.

Strauss, V. (November 20, 2015). Why today's college students don't want to be teachers. *Washington Post* https://www.washingtonpost.com/news/answer-sheet/wp/2015/11/20/why-todays-college-students-dont-want-to-be- teachers. Retrieved April 3, 2018).

Toppo, G., & Nichols, M. (Feb.1, 2017). Decades after civil rights gains, black teachers a rarity in public schools, *USA Today*. https://www.usatoday.com/story/news/nation-now/2017/02/01/decades-after-civil-rights-gains-black-teachers-rarity-public-schools/96721684. Retrieved March 30, 2018.

Vasudevan, L., Y Dijaynes, T. (2013). *Arts, media, and justice: Multimodal explorations with youth*. New York: Peter Lang.

LEARNERS' VIEWS OF THE TEACHER ATTRIBUTES IN CONTRIBUTING TO MEETING THE CHALLENGES OF THE CAPS CURRICULUM IN PHYSICAL SCIENCE

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Abstract

A decline in learner performance over the years in Physical Science at grade 12, in the transition from National Senior Certificate (NSC) to Continuous Assessment Policy Statement (CAPS), have implored us to do an investigation of the perceived attributes of the teacher in meeting the challenges imposed by the new CAPS curriculum. A total of 150 university students participated in this study. Learners were requested to give their views about their teachers on a questionnaire designed to elicit characteristics of a successful teacher. Learners were requested to indicate their degree of agreement or disagreement to each of the items of the questionnaire, on a 5-point Likert type scale of evaluation. The data was subjected to the Principal Component Analysis (PCA) procedure by use of the SPSS program, which revealed 3 broad clustered characteristics of the teacher. These characteristics are Teacher efficacy, Teachers' efficiency, effectiveness, and Teachers' understanding of CAPS curriculum. The results reveal that the teachers' frequent and immediate feedback on the quality of their assessments is considered the most important attribute about a successful teacher, while the use of active forms of learning is an area of concern for the present day teacher in meeting the challenges imposed by the CAPs curriculum for Physical Science.

Keywords: Physical Science, curriculum, teacher, demands and engaged.

1. Introduction

The achievement in Physical Science at grade 12 level has got worse over the last few years, more so since the inception of the new CAPS document. Apart from the learners, home, school and peer characteristics, the role of the teacher is of paramount importance and which according to Hattie (2003) contributes as much as 30% to learner achievement. We are informed from research that whenever the curriculum changes, as with changes in the CAPS curriculum, it is the teachers themselves feel uncertain about the content knowledge (Henze, Van Driel & Verloop, 2008; Lee & Luft, 2008; Ramnarain, U., & Fortus, D. (2013)). The difficulty that teachers face is their lack of deep and coherent understanding of the CAPS curriculum. The result of this is that teachers may struggle to monitor learner problems and at the same time unable to provide effective feedback of the subject (Hattie, 2003). We are informed from research that in South Africa today, of the 84% of teachers that are professionally qualified, only 42% of them are qualified in physics (Makgato & Mji, 2006). This will imply that the rest of the teachers will have to undergo sustained professional development in the subject to improve their content knowledge and pedagogical content knowledge (PCK) on the CAPS curriculum to bring about much improvement in Physical Science from the national average of around 50%. In this instance, it means that less than 50% of the teachers will benefit from such a programme, thereby compromising their PCK. The aim of this study was to explore the views of learners on their perceived attributes of their teachers.

2. Research Question

The research question for this study is underpinned by: What are the learners' views on the attributes of the present day teacher in meeting the challenges of the CAPS curriculum in Physical Science?

3. Conceptual framework

Peter Connor from Colorado State University (TILT) frames the theoretical framework for this study around the key principles in ensuring success in teaching by Fink (2006), but in its modified form. They are: Challenge students to a higher level of learning, Use of active forms of learning, Gives frequent and immediate feedback to the learners on the quality of their learning.

4. Methods

A sample of 150 first year university students participated in this study. This study made use of a questionnaire (see annexure 1) that was piloted by the author, inspired from the misconceptions in the examiner's reports of the grade 12 Physical Science papers. The Cronbach Alpha for this data is 0.875.

5. Results

In Figure 1, we have the various items of the questionnaire that corresponds to a specific attribute about the teacher.

Figure 1 Aligning items of the questionnaire to 1 of 6 attributes of the teacher. The average mean for corresponding items are also given.

Item(s)	Attribute of the Teacher	Average Mean
7, 11	Challenge learners to a higher level of learning	3.74
3	Use of active forms of learning	2.64
6, 8, 10	Gives frequent and immediate feedback to the learners on the quality of their learning	3.76
2, 4, 5	They provide a fair system for assessment and grading of learners	3.54
1	They care about what is being taught	3.46
9	They provide strong academic leadership	3.59

Of all the attributes that pertains to a teacher, item 3 whose mean value is 2.64, is not considered beneficial as a good perceived attribute about the teacher while the rest of the items revealed positive attributes about the teacher.

6. Teacher efficacy

They care about what is being taught (item 1)
The inception of the CAPS document has created more curricular demands on the present day teacher in teaching Physical Science. With respect to the students' responses to this item in the questionnaire, a mean score of 3.46 (item 1) is a reflection of their commitment to go the extra mile in fulfilling their professional obligations.

They provide a fair system for assessment and grading of learners (items 2 and 4)
In order to eliminate the errors that some of the learners are making in the examination papers, teachers are guided by reports from the department and from past year examination papers. For this item in the questionnaire, they have responded positively (mean score of 3.79 for item 2) and a positive attribute to their professionalism. Teachers should also look for alternate questions for the MCQ section, as learners seem to also battle with this section in the examinations. The learners have responded positively to this item in the questionnaire. The mean score for item 4 is 3.47.

Gives frequent and immediate feedback to the learners on the quality of their learning (item 10)
Teachers are in the habit of praising, encouraging and motivating learners in their care. For this item in the questionnaire, the learners have responded very positively (mean score of 3.92 for item 10) and an important item for success in any examinations.

Challenge learners to a higher level of learning (item 11)
Being conscious about the time the learner is required to spend per question in the examination or tests is crucial. Learners were most positive about teachers enforcing such a rule (mean score for item 11 is 3.93).

7. Teachers' efficiency and effectiveness in teaching

Use of active forms of learning (item 3)
The use of videos in teaching can be beneficial if used in the correct context and if it enhances active form of learning. For this aspect of the questionnaire, the learners have responded negatively (mean score of 2.64 for item 3), indicating that their teachers are not using videos to good advantage.

They provide a fair system for assessment and grading of learners (item 5)
Having a sound knowledge of the CAPS curriculum will only come through after a few years of experience in teaching the subject matter. The learners have responded fairly positively about their perception of their teachers' content knowledge of CAPS (mean score of 3.37 for item 5).

Gives frequent and immediate feedback to the learners on the quality of their learning (items 6 and 8)
Marking of tests and examination papers in the same format as required by examiners will give learners a better picture of what to expect in the examinations. In this regard, learners have responded positively about this item in the questionnaire (mean score of 3.63 for item 6). Proper feedback for all

assessment exercises is essential, the purpose of which is to zoom into misconceptions experienced by learners. In this respect, teachers are providing proper feedback (item 8, mean score 3.72).

Challenge learners to a higher level of learning (item 7)

If teachers are not pitching questions in Physical Science at varying levels of difficulty in school assessments, then students will experience considerable difficulty when confronted with the final examinations. In this respect, learners have responded positively to this item in the questionnaire (mean score of 3.54 for item 7).

They provide strong academic leadership (item 9)

Being punctual and regular to school is a given norm. The implementation of the CAPS curriculum has increased the workload of teachers' many-fold, as teachers are barely able to complete the syllabus in regulation time. From the survey, the students have commented positively (mean score of 3.59 for item 9) about their teachers fulfilling their professional obligations in being regular and punctual to school.

8. Discussion and Conclusion

Since the role of the teacher is of paramount importance variance in making a difference in the lives of learners, then this variance should be enhanced to achieve greater results (Hattie, 2003). The perceived behaviour of a teacher as viewed by the learner in terms of efficiency, efficacy, and effectiveness are considered key milestones for learner proficiency. The perceptions of the learners is all positive about their teachers having the adequate pedagogical skills in delivering the subject matter to the satisfaction of their learners.

References

Fink, L. D. (2006). *Fink's 5 Principles of Fine Teaching.* Retrieved from http://tlccvc.org/finksfive.htm

Hattie, J. (2003). Teachers Make a Difference, What is the research evidence? *Australian Council for Educational Research (ACER)*, 1-17.

Henze, I., Van Driel, J. H., & Verloop, N. (2008). Development of experienced science teachers' pedagogical content knowledge of models of the solar system and the universe, *International Journal of Science Education*, 30, 1321-1342.

Lee, E., & Luft, J. A. (2008). Experienced secondary science teachers' representation of pedagogical content knowledge. *International Journal of Science*, 30, 1343-1363.

Makgato, M., & Mji, A. (2006). Factor associated with high school learners' poor performance: a spotlight on mathematics and physical science, *South African Journal of Education*, 26(2), 253-266.

Ramnarain, U., & Fortus, D. (2013). South African physical sciences teachers' perceptions of new content in a revised curriculum, *South African Journal of Education*, 33(1), 1-15.

Annexure 1. Attributes of a teacher to meet the challenges of CAPS.

		Fully Disagree	Disagree somewhat	Neutral	Agree somewhat	Fully Agree
1	My teacher has devoted his holidays, weekends and time after school to complete the syllabus and do some revision					
2	My teacher has taught us correct examination techniques to answer examination type questions					
3	For a difficult sections, my teacher has shown us a video lesson of a particular topic					
4	My teacher has used the best available resources in the market to expose us to a variety of question to make us better prepared for the examinations					
5	My teacher has a sound knowledge of the CAPS curriculum and this has helped my preparation for the examinations					
6	My teacher has marked all our tests and examination scripts in the same format as is required in the final examinations					
7	My teacher has pitched all the school tests and examination papers at a high standard in anticipation of what is expected in the final examination					
8	My teacher is in the habit of giving us proper feedback to all tests and homework exercises					
9	My teacher is always punctual and never misses a class lesson					
10	My teacher always praises us and motivates us to achieve our goals					
11	My teacher prepares us to be time conscious and to adhere to the mark allocation for each question					

INVESTIGATION AND ASSESSMENT OF STUDENTS' MANIPULATING DATA AND CHANCE ABILITY

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Abstract

US Department of Education and Apple, Cisco, Microsoft, Dell and other companies co-founded twenty-first century key competencies Union, that the twenty-first century the most critical capabilities needed for: learning and innovation ability, information, media and technology literacy, work and life skills. Key competencies in information literacy included data interpretation and the prediction of possibility, which has a critical impact for the decision of problem solving. Numbers is the main medium of information in the pursuit of electronic-century. Statistics and probability is the most important tool for interpretation and analysis of digital information. To cultivate the ability of data analysis, interpretation, and the prediction and judgment of event probably occurring is the prior knowledge of statistical literacy in elementary and junior high school. Therefore, this study intends to compile a set of crossing grade assessment with reliability and validity. The assessment and its duplicate norm tests suit to evaluate the students' ability of data and chance in order to assess their development in the second stage (third and fourth grade), third stage (fifth and sixth grade) and fourth stage (seventh and eighth grade). In addition to, the project investigates the ability difference of data and chance with international students. The research results will be an important basis for curriculum development, teachers' instruction as well as evaluation of students' ability of data and chance. The report is the first year result which had finished pretest data analysis. The finding is that the test had good content validity. Items spread reasonably well along the latent ability and are aligned with various ability levels. The test has satisfactory person separation reliability.

Keywords: Statistical literacy, data and chance, ability assessment tool.

TELE-MEDICAL EDUCATION USED TO TRAIN HEALTH PROFESSIONALS IN TIBET, CHINA

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Abstract

It has been an important policy of the Chinese government to provide aid and assistance for the development of Tibet, a high-altitude remote minority area in China. With nearly one-eighth of China's total land areas and about 0.002% of China's total population, the Tibet Autonomous Region lags behind the domestic average level in medical education and is in bad need for medical professionals. The West China Center of Medical Sciences (WCCMS) of Sichuan University has managed to introduce a tele-medical education project to transmit medical courses in a real-time and interactive way. Based on this system, WCCMS has established a model for assisting the Tibet University Medical College through transmitting medical courses, training their medical faculty, sending WCCMS faculty to work in Tibet and admitting medical teachers and students from Tibet to receive high-quality training at WCCMS and its hospitals. Up to date, over 3000 academic hours of 15 medical courses have been provided through this system, where 200 Tibet medical students benefited, most of whom are now working in Tibet. 30 Tibet medical students have completed their residence training at WCCMS hospitals and 41 Tibet medical teachers have received postgraduate training at WCCMS. Over 600 audio-video medical education materials are provided to Tibet Medical College.

Keywords: Tele-medical education, health professionals training, West China center of medical sciences of Sichuan university, Tibet medical college.

ENTREPRENEURIAL SCHOOL: A PLATFORM FOR REALIZATION OF INTERDISCIPLINARY PROJECTS

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Abstract

Entrepreneurship education appears to be a promising avenue for developing entrepreneurial skills among young people. This tendency is present in several countries and environments, and the school is targeted in order to give tools and develop entrepreneurial spirit among young people because these are considered as key players in promoting economic growth (European Commission, 2013). The appropriate teaching method for achieving academic and entrepreneurial goals seems to be the project-based approach (MELS, 2005). The project-based approach is also the prioritized strategy to implement interdisciplinary in schools (LeDoux, 2003) and it appears that entrepreneurship is a privileged context for the realization of interdisciplinary projects in order to give meaning to the learning experience (Pépin, 2011). Based on the framework of Proulx (2004), the objective of this study is to describe the processes of implementation and deployment of interdisciplinary projects in the context of the entrepreneurial school. Eight individual interviews were conducted with school staff from an entrepreneurial school where several interdisciplinary projects were going on. Our results show that the teacher assumes a key role as a supervisor throughout the interdisciplinary project in making sure that the education program objectives are attained. However, the lack of collaboration between the teachers remains a challenge in order to equip and help them with the realization of the interdisciplinary project. As the implementation of interdisciplinary projects represents a non-traditional teaching method, solutions are identified to ensure sustainability the implementation of these projects in this entrepreneurial context.

Keywords: Interdisciplinary, project-based learning, entrepreneurial school, qualitative methodology, case study.

1. Introduction and context

A promotion of entrepreneurial culture has been taking place in different countries to stimulate and diversify economic growth and entrepreneurship education appears to be a promising avenue for developing entrepreneurial skills among young people (European Commission, 2013). The school is targeted in order to give tools and develop entrepreneurial spirit and skills among young people because these are considered as key players in promoting economic growth (European Commission, 2013). It seems that the appropriate teaching method for achieving academic and entrepreneurial goals is the project-based approach (Ministère de l'Éducation, du Loisir et du Sport [MELS], 2005). Proulx (2004) defines project-based learning as a process of acquiring and transferring knowledge in which the student must anticipate, plan and realize an observable project. In this line, school entrepreneurship is precisely a project culture in which students take action to produce something new and change (MELS, 2005). The project-based approach is also the prioritized strategy to implement interdisciplinary in schools (LeDoux, 2003), and Hasni (2010) adds that the project pedagogy is the teaching method that better characterizes interdisciplinarity. According to Mansilla (2005), interdisciplinarity allows the integration of knowledge and the thinking patterns of two or more school subjects in order to produce cognitive advancement, such as solving a problem or creating a product.

1.1. Relevance and objective

It appears that entrepreneurship is a privileged context for the realization of interdisciplinary projects in order to bring the student to give meaning to the learning experience and acquire new knowledge (Pépin, 2011). The report of the European Commission, Education, Audiovisual and Culture

Executive Agency and Eurydice (2012) reiterates the finding of Pépin (2011) and highlights that the majority of educational activities implemented to develop entrepreneurial skills use interdisciplinary methods. Thus, the objective of this study is to describe the processes of implementation and deployment of interdisciplinary projects in the context of the entrepreneurial school.

2. Conceptual framework

The steps for project implementation developed by Proulx (2004), inspired by LeDoux (2003), serve as theoretical and methodological foundations for this study. This theoretical framework consists of 4 steps related to the implementation of pedagogical projects: (1) Preparation, (2) Implementation, (3) Evaluation, and (4) Disposition. The first step aims to clarify the educational intention, to choose the themes of the project and to structure the major stages of it. When the project is implemented, it's necessary to create student teams to be able to collect all the information and resources available (step 2). At this step, an emphasis is placed on project coordination and supervision. During the third step, evaluation processes are also implemented by the types and the evaluation methods being used. The project concludes with the disposition and presentation of the project to the class, to the school and/or to the community (step 4).

3. Methods

This research prioritizes a qualitative case study methodology that focuses on a limited number of cases that are considered significant given the specific objective of the study (Merriam, 1988). In this study, the case is an entrepreneurial school where teachers have prioritized pedagogical projects to implement interdisciplinarity. The school welcomes students from elementary and secondary levels and has integrated an entrepreneurial component into its success plan and used educational projects, in which many interdisciplinary projects are deployed. We conducted eight individual interviews with school staff (school principals and teachers) to be able to meet the specific objective of this study. This type of interview gathers the opinions and views of participants to facilitate understanding and interpretation of realities (Poupart, Deslauriers, Groulx, Laperrière, Mayer, & Pires, 1997). The individual interviews included 20 questions aligned with Proulx's four steps (2004) and the duration of these interviews varied between 25 minutes and 61 minutes. The qualitative data were analyzed using Boutin's strategy (2007) and the NVivo 10 software was used as a support to conduct these analyzes. A validation process was achieved and the percentage obtained was 95%.

4. Results and discussion

4.1. Preparation

Our results show that the teacher assumes a key role as a supervisor throughout the interdisciplinary project preparation in making sure that the education program (EP) objectives, the competencies related to the school disciplines involved in the projects and the goals of entrepreneurship are achieved. LeDoux (2003) has rightly emphasized the key role of the teacher as a pedagogical supervisor between the student and the learning to be acquired in the project. It is important, however, to leave some latitude to the students in the choice of the theme to be exploited in the project in order to raise their motivation.

4.2. Implementation

It seems that, at this step, there are interesting collaborations between secondary teachers, which greatly facilitates the integration of several school subjects into interdisciplinary projects. On the other hand, the lack of collaboration between the elementary teachers remains a challenge in order to help them with the realization of the interdisciplinary project. In our view, it is necessary to increase collaboration between school staff and Hasni (2010) highlights that one of the important conditions for the implementation of interdisciplinarity is precisely the commitment and availability of teachers to work together.

4.3. Evaluation

Teachers take advantage of the deployment of interdisciplinary projects to evaluate students. These projects have a learning support (formative evaluation) and recognition of competencies (summative evaluation) functions (Fourez, Maingain, & Dufour, 2002). During deploying interdisciplinary projects in the entrepreneurial context, teachers tried as much as possible to match the assessment of school disciplines and entrepreneurial skills in order to achieve the goals of the EP and the objectives of entrepreneurship. Based on analyzes of interviews, participants found that the

interdisciplinary projects are a non-traditional method of teaching and this result is consistent with the literature (Hasni, 2010) that interdisciplinarity is associated with risk teaching contrary to traditional and disciplinary teaching.

4.4. Disposition

For this final step, it is important to present the outcome of the project to the community members and parents who were project partners (such as open house day, formal presentation to school council). A formal discussion is also held at the end of the project between the teacher and the pupils in order to identify the learning achieved throughout the interdisciplinary project, both in terms of learning related to the school subjects involved and the entrepreneurial skills developed. Asked about the desirable improvements to be made to encourage the deployment of interdisciplinary, a recommendation draws our attention to the fact that it can be difficult for a teacher who starts in an entrepreneurial school to implement an interdisciplinary project in this specific context in addition to performing all the other tasks expected in education. This observation reiterates the importance of closer collaboration between teachers in order to shared teaching strategies, among others (Erickson, 1996).

5. Conclusion

Using theoretical framework of Proulx (2004), the aim of this study was to describe the processes of implementation and deployment of interdisciplinary projects in the context of an entrepreneurial school. It's seem that the steps related to implementation (step 2) and evaluation (step 3) are more complex and require more time and planning for teachers than the other steps. Despite the fact that the implementation of interdisciplinary projects represents a non-traditional teaching method, the combination of interdisciplinary and entrepreneurship is profitable to encourage the development of disciplinary learning and entrepreneurial skills and serves, somehow, as a platform for realization of interdisciplinary projects.

References

Boutin, G. (2007). *L'entretien de groupe en recherche et formation.* Montréal, QC: Éditions nouvelles.
Erickson, L. (1996). *Designing Integrated Curriculum that Promotes Higher Level Thinking.* Alexandria, VA : Association for Supervision and Curriculum Development.
European Commission. (2013). *Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions entrepreneurship 2020 action plan, Reigniting the entrepreneurial spirit in Europe.* Brussels, Belgium: European Commission.
European Commission, Education, Audiovisual and Culture Executive Agency and Eurydice. (2012). *Entrepreneurship education at school in Europe. National strategies, curricula and learning outcomes.* Brussels, Belgium: Education, Audiovisual and Culture Executive Agency. https://doi.org/10.2797/80384
Fourez, G., Maingain, A., & Dufour, B. (2002). *Approches didactiques de l'interdisciplinarité.* Bruxelles, Belgique: De Boeck.
Hasni, A. (2010). L'éducation à l'environnement et l'interdisciplinarité: de la contextualisation des savoirs à la scolarisation du contexte? Dans A. Hasni & J. Lebaume (Ed.), *Enjeux contemporains de l'éducation scientifique et technologique* (pp. 179-222). Ottawa, Ontario: Les Presses de l'Université d'Ottawa.
LeDoux, A.M. (2003). *Le travail en projet à votre portée.* Anjou, QC: Édition CEC.
Mansilla, B. V. (2005). Assessing student work at disciplinary crossroads. *Change: The Magazine o Higher Learning, 37*(1), 14-21. https://doi.org/10.3200/CHNG.37.1.14-21
Merriam, S. B. (1988). *Case study research in education: A qualitative approach.* San Francisco: Jossey-Bass.
Ministère de l'Éducation, du Loisir et du Sport. (2005). *Invitation à la culture entrepreneuriale: guide d'élaboration de projet à l'intention du personnel enseignant.* Québec, QC: Gouvernement du Québec.
Pépin, M. (2011). L'entrepreneuriat en milieu scolaire: de quoi s'agit-il? *McGill Journal of Education, 46*(2), 303-326. https://doi.org/10.7202/1006441ar
Poupart, J., Deslauriers, J.-P., Groulx, L.-H., Laperrière, A., Mayer, R., & Pires, A. P. (1997). *La recherche qualitative. Enjeux épistémologiques et méthodologiques.* Boucherville, QC: Gaëtan Morin Éditeur.
Proulx, J. (2004). *L'apprentissage par projet.* Québec, QC: Presses de l'Université du Québec (PUQ).

PARENTAL SENSE OF COMMUNITY AND PERCEPTION OF EDUCATIONAL COMMUNITY: THE MEDIATING ROLE OF SOCIAL COMPETENCE

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Abstract

This study examined parental social competence as mediators in links between sense of community and perception of educational community. Participants were 422 parents with elementary school student. Variables measured in this survey were self-reported social competence, sense of community and perception of their child's school as educational community. Descriptive analysis, correlations analysis, and the multiple regression analysis for research model test were used. Additionally, Sobel test was used to verify the significant mediating effect. The results were as follows. First, it showed sense of community and social competence were positively correlation with perception of educational community. Second, sense of community significantly influenced on social competence and perception of educational community. Third, the results of Sobel test showed evidence of partial mediation involving parental social competence. Findings suggested parent education to support parental social competence could help make them aware of their child's school as educational community. Based on this results, we implemented a learning community with parents focused on social competence as part of a parent education program for building educational community. As we expected, the findings of this practice were parents participated in this learning community improved on their sense of community. Further, they experienced 'understanding that society needs to be community', 'understanding parental roles for raising children as community member', and 'self-exploration for acting as a community member.

Keywords: Sense of community, perception of educational community, social competence, parents with elementary school, parent education.

1. Introduction

This study examined parental social competence as mediators in links between sense of community and perception of educational community.

2. Methods

The sample of the research consisted of 422 parents with elementary school student selected according to cluster sampling method in Southeast area, South Korea. Backgrounds of the sample of mothers participated in this study were showed table 1.

Table 1. Backgrounds of the sample of mothers participated in this study.

		n	%
Age	30s	157	35.7
	Above 40s	265	60.8
Levels of education	Below high school	132	31.3
	college or university	265	62.8
	graduate school	20	4.7
Household monthly income	Less $3,000	90	21.3
	$3,000 - $5,000	212	50.3
	Above $5,000	114	27.0
Number of children	1	71	16.8
	2	273	64.7
	Above 3	74	17.5
Total		422	100

Variables measured in this survey were self-reported social competence, sense of community and perception of their child's school as educational community. Parental social competence of Authentic parental competence scale(Chung & Choi, 2013) means self-evaluation of their ability to contribute to the local community and society in general (9 items). Sense of community was a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together(McMillan & Chavis, 1986) and measured with the 15 items. Parental perception of school as educational community that had been developed by Chung, Kyun, Park(2015) was measured with the 17-items which consists of items.

Using the collected data, descriptive analysis, correlations analysis, and the multiple regression analysis for research model test were used. Additionally, Sobel test was used to verify the significant mediating effect.

3. Results

3.1. Correlation with parental sense of community, social competence and perception of educational community

It showed sense of community and social competence were positively correlation with perception of educational community as below.

Table 2. Correlation with parental sense of community, social competence and perception of educational community.

	Perception of educational community
Sense of community	.73***
Social competence	.48***

3.2. Meditating effect of parental social competence

As shown in table 3, parental sense of community significantly influenced on social competence and perception of educational community. And the results showed evidence of partial mediation involving parental social competence through 3 steps. Further, Z-value was 4.28(p<.001) in Sobel test. It means the parental social competence was a significant meditator.

Table 3. Meditating effect of parental social competence.

		B	S.E	β	t	R2	F
Step 1	Sense of community →Social competence	.54	.05	.45	10.27***	.20	105.53***
Step 2	Sense of community →perception of educational community	.71	.03	.73	21.55***	.53	464.39***
Step 3	Sense of community Social competence	.64	.04	.65	17.16***	.55	251.95***
	→perception of educational community	.14	.03	.17	4.37***		

4. Conclusions

Findings suggested parent education to support parental social competence could help make them aware of their child's school as educational community. Based on this results, we implemented a learning community with parents focused on social competence as part of a parent education program for building educational community. As we expected, the findings of this practice were parents participated in this learning community improved on their sense of community. Further, they experienced understanding that society needs to be community', 'understanding parental roles for raising children as community member, and self-exploration for acting as a community member.

References

Chung, K.S., & Choi, E.S. (2013). A study on the development of 「Authentic parental competence scale」 for mothers with young children. Journal of Korea Open Associaltion for Early Childhood Education, 18(3), 225-257.

Chung, K.S., Kyun, J.Y., & Park, H.K. (2015). The development of scale for awareness of early childhood educational community : Focused on parents and teacher. Korean Journal of Early Childehood Education, 35(6), 95-116.

McMillan, D.W., & Chavis, D.M. (1986). Sense of community: A definition and theory. *American Journal of Community Psychology*, 14(1), 6-23.

IMPROVING THE SOCIAL INCLUSION OF DISADVANTAGED LEARNERS BY USING A PERSONALIZED SOFTWARE

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Abstract

In this work we present the needs analysis for the target groups of the project TESI - Adaptive Personalized System for Creating Expression Tools in Social Inclusion of Learners with Verbal Communication Disabilities: the users (people with verbal communication disabilities, who will use the software to compensate their communication deficiencies by expressing themselves using graphical symbols and annotations) and the tutors (people who work together with the users, and who will create personalized instruments for their users).

The basic characteristics of the target groups were studied and a pedagogical-psychological profile prepared. They will help us to build a conceptual model, corresponding to the age, abilities and specific needs of the group, for which TESI system will be developed.

Keywords: Social inclusion, m-learning, disadvantaged people, new project.

1. Introduction

Technological innovations, such as new generations of laptops, tablets, smart technology devices, with a wide spectrum of options for the users, are part of the daily reality of different generations. The question to seek didactic features of smart technologies in order to adapt them to the training and daily life conditions of disadvantaged groups of people requires a targeted study of their feasibility. TESI is a KA3 ERASMUS+ project which focuses on social integration of peoples with verbal communication disorders that are at risk of social isolation. It is dedicated to conceptualizing and development of social competence related to personal, social and professional development of people with this speech, language and communication needs through creation of adaptive, affordable and easy-to-use software solution (TESI system) that will enrich their personal expression opportunities. The TESI system is aimed for helping people with verbal communication problems in their everyday life and at the school, or the center, where they are trained. The role of TESI is to enable these people to be active and to support their opportunities for expression, which is a prerequisite for the formation of skills and the absorption of certain, tailored to their capabilities, knowledge.

2. Target groups

Because of the diversity of the children with speaking impairments (different severity levels of autism, different levels of intellectual abilities, different personalities, the presence or the absence of further impairments – such as sensorial problems, epilepsy etc.) it is less likely that they would respond in the same way and make similar progresses undergoing a single type of intervention. Thus, several types of intervention will probably be needed to answer all the needs a child could have.

The case studies focused on selected children of the target group, data on their parents, families and life their background for the following partner institutions in the project: Special gymnasia school „Sf. Mina″, Craiova, Romania, Josip Matos Primary school (Osnovna škola Josipa Matoša), Croatia, Association for Education and Development of Disabled People, Greece, and Special School for Students with Hearing Impairments "Stoyan Belinov" – Plovdiv, Bulgaria.

The core method of the study consisted of observation, pursuing fine and gross motor development, space orientation, answer to commands and use of all analyzers. Behavioral record was done as much as possible on time for each subject, and the teachers who worked with them for a long period of times were assessed.

2.1. Target group - students

Number of students: 44 (33 boys, 11 girls)
Age: from 7 to 45

Developmental difficulties: autism and autism spectrum disorder (21 students); cerebral paralysis (2 student); Down syndrome (4 students); Cri du chat syndrome (1 student); AD/HD syndrome (1 student); Dandy-Walker syndrome (1 student); microcephaly (1 student); muscular dystrophy (2 students); bilateral sensorineural hearing loss (1 student); bilateral conductive hearing loss (1 student); bilateral hearing loss (4 students); mild mental retardation (11 students); generalized developmental disorder (1 student); severe cognitive impairment (3 students); speech and language difficulties (all students).

ICT usage (smart phones, tablet computers, computers): satisfying to goo

2.2. Target group - teachers

Number of teachers: 61 (51 women, 10 men)

Teacher profiles: 7 education rehabilitators, 7 speech therapists, 7 psychologist, 3 physical education teachers, 1 catechist, 3 social educators, 2 hearing and speech rehabilitators, 2 primary school teachers, 4 teachers in various school disciplines, 16 special education teacher, 2 logo therapist, 2 occupational therapist, 2 social workers, 1 medical doctor and 3 nurses.

Qualifications: graduate qualification, high school education, Bachelor degree, M.sc, M.ed

Working experience: from 2 to 35 years

ICT usage: good (daily usage of Internet, smart phones, tablet phones and computers)

2.3. Target group – parents

Number of parents: 70 (39 women, 31 men), among them 2 with hearing loss

Parent profiles: traders, artisans, office bearer, police officers, construction workers, agriculturists, housewives, pensioners, teachers, chefs, housekeepers, a social assistant, light industry workers, painters, free lancers, office employees, construction workers, health professionals, sellers, construction workers, personal assistants, military personnel, mechanical technicians.

Qualifications: finished elementary school, high school education, undergraduate and graduate qualification, university degree

Abilities: average or above average intellectual abilities

ICT usage: good (daily usage of Internet, smart phones, tablets and computers)

3. Results

The communication disorders of the target group of students can be divided into: disturbance of linguistic expression and mixed disorder of linguistic intake and expression.

The Disturbance of linguistic expression is the delayed and incomplete development of language skills in a sufficiently normal linguistic and social environment without the presence of obvious organic lesions in the central nervous system, without the existence of sensory impairments (vision, hearing) and a normal index of intelligence. It is a disorder that occurs only to children, but it is not just a childhood problem, as its impact on the individual - in all areas of his life – follows him through its life and influences him. The characteristics of this disorder are varied, but the most basic ones are: very poor vocabulary and very simple grammatical structure and thus creation of unconnected sentences, frequent use of phrases without conceptual content, inability to find appropriate words in order to correctly formulate what they want say, many repetitions, cannot create complex words, does not understand idioms, transfers, similarities and abstract concepts, fails to distinguish the energetic from the passive voice, and perhaps this, like most of the above, is due to its inability to memorize. Thus, there is still a difficulty in executing complex instructions that may be given to him when communicating with others.

The Mixed Disturbance in Language Expression is a dual disorder. Individuals not only do not understand the words of their interlocutors, but they cannot even express themselves. Thus, the difficulty in communicating with others seems to be even greater.

For all students there were identified the areas of communications to be improve: hygiene, nourishment, dressing, playing with other children, health, shopping, moving around familiar environment, public transportation, communication with neighbors, communication with unfamiliar people, expressing personal needs and wants, social interactions.

The student status for the above mentioned target group is given in Table 1.

Taking into consideration the student status and needs, TESI Tool will be design as an assistive communication tool for people with reading, writing and verbal communication difficulties. It will enable users to communicate using visual cues (images) and to learn and perform daily activities by following visual instructions. A database of images will be collected together by teachers and parents in order to fit the specific needs of each student, after the general needs were taken into consideration in the application design.

Table 1. Student status for the target group of 44 students.

STUDENT STATUS	Absent/Never	Very poor/Almost never	Poor/Rarely	Medium/Sometimes	Good/Often	Very good/Always
Expressive speech	x	x	x			
Receptive speech			x	x		
Vocabulary, sentence, retelling		x	x			
Reading skills	x	x				
Mathematical skills	x	x				
Coloring				x		
Fine motor skills	x	x	x	x	x	
Gross motor skills		x	x	x	x	
Attention and concentration	x	x	x			
Dressing skills	x	x	x	x		
Personal hygiene skills	x	x	x	x		
Eating skills	x	x	x			
Socializing and peer relation			x			
Relation with teachers			x			
Obeying school rules		x	x			
Expressing emotions			x			
Making eye contact			x			
Name call reaction		x	x			
Facial expression according the situation		x	x			
Appropriate reaction to the physical contact					x	
Stay with large group of people			x			
Interest in playing with other children			x			
Stereotyped repetition of words and phrases				x		
Non appropriate behavior (self-injury, throwing objects		x	x	x		
Living in an imaginary world				x		
Fascination by unusual objects or movements				x		

4. Conclusions

Three target groups consisting in students with verbal impairments, their teachers and parents were studied in order to identify the general and the specific needs for improving their communication in the daily life. The results of our study will be used to design an application for mobile devices which uses images and successions of images to express basic sentences and actions. This m-tool will contribute to a more effective social inclusion of the target group students, and can be extended for those people with communications deficiencies.

Acknowledgements

References

Iacobescu, G. E. (2016) *Needs for mobile technology to expand training opportunities of people with musculoskeletal disorders*, The 9th annual International Conference of Education, Research and Innovation (ICERI2016), Sevilla, Spain.

Iacobescu, G. E. (2017) *Using mobile technology to improve policy reform for inclusion of disadvantaged groups in education – mRIDGE project*, The Future of Education Conference, Florence, Italy.

Iacobescu, G. E. (2017) *M-learning tools for disadvantages students – mRIDGE project*, International Conference on Education and New Developments 2017 (END 2017), Lisbon, Portugal.

Iacobescu, G. E. (2018) *Adaptive Personalized System for Creating Expression Tools in Social Inclusion of Learners with Verbal Communication Disabilities - TESI project*, 12th annual International Technology, Education and Development Conference, Valencia, Spain.

CHALLENGE IN CLASSROOMS: MORAL REASONING AND EMOTIONAL COMPETENCE

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Abstract

We present here the first fruits of a research focused on pupils in their first year at Secondary School. Its main aim is to explore the possible relation between moral development, as understood by Kohlberg, and the components of emotional intelligence described by Baron-Cohen, drawing on the studies by Bandura, Caprara or Barbaranelli, which stress the impact that lack of emotional components (e.g. self-concept, empathy, flexibility and control) have on moral detachment. At a cooperative school in the province of Alicante (Spain), following Kohlberg's method and through an action-research design, we have proposed 11 dilemmas and a BarOn questionnaire (EQi:YV™) to be resolved by a small group of 25 boys and girls (ca. 12-14 years old) during their tutoring session. Obtained results show the whole group at the same level of moral reasoning, but at different sublevels. We have also found that the same individuals who are at lower sublevels obtain lower scores (below the group average) in the four analysed emotional components (intrapersonal level, interpersonal level, stress management and adaptability). Use of moral dialectics in the classroom promotes cognitive progress, social responsibility and decision making at a critical evolutionary moment.

Keywords: Secondary school, moral development, emotional intelligence, early teenage.

1. Introduction

The news constantly bombards us with reports of the disruptive behaviour of boys and girls at secondary schools, young people between the ages of 14 and 18, in whom a certain moral disengagement seems to have set in (Ortega Ruiz, Sánchez and Menesini, 2002). By pursuing this idea, based on the concept of moral disengagement proposed by Bandura in 1991, which links the learning and internalisation of social standards with a certain ability to regulate how our emotions behave, our aim is to explore the possible link between moral reasoning and emotional competencies. Our theoretical framework is supported by biological contiguity and Piagetian psychology (Piaget, 1948) and the proven connection, which Kohlberg established in 1984, between intelligence (capacity for reasoning) and the ability to argue logically in relation to a situation that creates some kind of conflict or dilemma. We take a position on an eclectic evolving theoretical framework, in which biological contiguity is as important as interaction with the environment and the experience that this leaves in each person.

The biological development of boys and girls in interaction with their family, at school and with their peers opens up the path from one cognitive and moral structure to another more mature and complex one. Kohlberg links moral reasoning with the quality of cognitive stimuli, experience and role-taking, in the sense that Mead gives to this type of experience. One of the keys to moving from one moral reasoning to another is promoting dialogue, dialectics: giving boys and girls the opportunity to take on different roles, passing on experiences to them and allowing them to participate in judging and assessing them. (Hersh, Reimer &Paolitto 1984).

Since the nineties, the importance of socio-emotional education has been explicitly stated in the description of goals, procedures and evaluation of the knowledge, competencies and attitudes shown at school. Authors such as Mayor and Salovey (1990), who follow the tradition of Thorndike, Wesler, Maslow, Gardner and Payne, try to incorporate emotional intelligence into human cognitive abilities. The work of Daniel Goleman (1996) marks a turning point in the consideration of Emotional Intelligence as a key component in achieving social success.

Every emotion predisposes us in a different way to an action (Wallon, 1986; Levenson, Ekman and Friesen, 1990), but most emotional expressions are learnt in a specific sociocultural environment (Palomero and Fernández Abascal, 1998). BarOn (1997) detaches himself from the cognitive-

developmental construct and suggests studying Emotional and Social Intelligence from a multifactorial approach that relates more closely to aspects linked to personality (Alzina, 2013; Pacheco y Berrocal, 2016).

2. Design

We proposed conducting an exploratory study following the guidance that Kohlberg (1975) gives on the applicability of his theory to education. We chose to carry out the study in a private secular secondary school in the province of Alicante, which is set up as a cooperative in which both teachers and students are part of the company, and it is implied that everyone is concerned with providing and obtaining a good education. Our population universe is made up of the pupils from the selected school, and the sample is selected, purposive and non-probabilistic. The total number of male and female pupils who attend the tutorial is 28, and 25, those who brought the informed consent form from home, remained (17 boys and 8 girls). Their ages range between 12 (6 girls and 4 boys), 13 (11 boys and 2 girls) and 14 (2 boys).

3. Objective

We have a twofold objective: on the one hand, we would like to explore the possible relationships between moral reasoning and emotional competencies and, on the other, provide the teachers with accessible dialectic tools that are useful for educational psychology intervention.

4. Methods

During their regular tutorial hour, with their usual teacher, and supported by a voluntary student and the centre's guidance counsellor, the activity was explained to them, and they were given a questionnaire with 10 dilemmas+1.

Dilemma 11 was prepared by the tutor and the guidance counsellor, as they had just learned about a case of cyberbullying involving a girl in their year. The 11 dilemmas were prepared following Kohlberg's method, contextualised to suit the interests that scientific literature indicates are relevant for the age group that we are studying and which we could refer to as early adolescence (friendship, social responsibility, respect in romantic relationships, respect for others, relationships with authority, relationships with the forbidden, distribution of time, online bullying, etc.). The ten dilemmas +1 are real dilemmas with the solution limited to two options and at least one argument to justify the stance taken. Students were given 35 minutes to respond. Once they had all finished, they were given the short version of the BarOn (EQi:YV™) questionnaire, considering that it was an excellent tool for preparing a simple and thorough study on the emotional competencies of a small group of early adolescents. Our session finished at this point, but the class group continued working.

5. Discussion

We will now comment on significant aspects that were observed when analysing the results. To solve the dilemmas, 24 of the 25 subjects were placed at the Conventional Level, while only one remained at the Pre-Conventional Level. Similarly, we found that 24 of the 25 subjects reached the average level in the scores on the Inventory, except one, the same 12-year-old boy.

Only in 3 of the 11 dilemmas were significant differences observed in the solution. However, within the same level, two big blocks were identified in the group, corresponding to the two stages or sub-phases which make up the Conventional Level. These dilemmas covered cyberbullying, failing, telling on someone and proposing early sexual relationships. These issues are highly relevant in the current context and support the link between reaching a certain level of moral reasoning and proper management of emotional competencies, education about which will undoubtedly be a determining factor in moral reasoning and development (Prorokovic, Nikolic & Smic, 2017).

The direct scores obtained in the Inventory by each of the 25 subjects enable us to position the subjects within the group itself in each of the four evaluated skills (Intrapersonal, Interpersonal, Stress management, Adaptability). Thus, we can observe how the whole group, except our subject number seven, obtains a score above the possible average; and, once again, 14 of the 25 young people are above the group average in each of the skills, and 13 below average. We found it relevant that 100 percent of our subjects were at the same stage for role-taking responsibility. All of them, without exception, prioritise their role over their individual position, while when acting without a role, 10 of the 25

(including 5 of the total number of 8 girls) respond in a less empathetic, more selfish way while avoiding social responsibility. It would certainly be interesting to look further into gender differences (Wang, 2016) and the importance of granting roles and responsibility to boys and girls of these ages, as Kohlberg already stated. To conclude, it is worth highlighting that the lowest scores were obtained in intrapersonal skills and adaptability skills, while the highest scores were in interpersonal skills and stress management. This is in line with the evaluated moral reasoning. It could also indicate that it would be worth working on emotional self-awareness, assertiveness and self-actualisation with this group. We think that each subject's personality (Wildermuth, De Mello e Souza & Kozitza, 2017) and optimism influence these scores, as well as the high value given to the social image that we present, or want to present, during this developmental stage. These are all factors to continue studying.

6. Conclusion

Moral dilemmas, which are closely connected to reality and contextualised to everyday life, are an excellent educational psychology resource not only for evaluating moral reasoning but also for forming a moral judgement, accounting for and becoming aware of one's own hierarchy of values. Furthermore, taking on pro-social roles provides us with experiences that encourage and motivate girls and boys to gain some perspective of their reality and of their environment. Attaching importance to student participation in the school community means giving them the opportunity to grow up while feeling that they are part of the school organisation. Morals are not taught, they are built in everyday life from daily moral behaviours.

We know that this is a small, exploratory study with many limitations, but as part of the action research design, combining the two tools (solving dilemmas and the BarOn inventory) was very useful to identify the emotional management needs of the group and of each one of its members.

References

Alzina, R. B. (2013). *Educación emocional*. Desclée de Brouwer

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational behavior and human decision processes*, *50*(2), 248-287.

Baron-Cohen, S. (1997). *Mindblindness: An essay on autism and theory of mind*. MIT press.

Blatt, M. M., & Kohlberg, L. (1975). The effects of classroom moral discussion upon children's level of moral judgment. *Journal of moral education*, *4*(2), 129-161.

Esnaola, I., Freeman, J., Sarasa, M., Fernández-Zabala, A., & Axpe, I. (2016). Validity evidence based on internal structure of scores of the Emotional Quotient-Inventory: Youth Version Short (EQ-i: YV-S) in a Spanish Sample. *The Spanish journal of psychology*, *19*.

Fernández-Abascal, E. G., & Palmero Cantero, F. (1998). *Emociones y adaptación*. Ariel.

Goleman, D. (1996). Emotional Intelligence. Why It Can Matter More than IQ. *Learning*, *24*(6), 49-50.

Hersh, R. H., Reimer, J., & Paolitto, D. P. (1984). *El crecimiento moral: de Piaget a Kohlberg* (Vol. 34). Narcea Ediciones.

Kohlberg, L. (1984). Essays on moral development: Vol. 2. The psychology of moral development: Moral stages, their nature and validity.

Levenson, R. W., Ekman, P., & Friesen, W. V. (1990). Voluntary facial action generates emotion-specific autonomic nervous system activity. *Psychophysiology*, *27*(4), 363-384.

Pacheco, N. E., & Berrocal, P. F. (2016). *Inteligencia emocional y educación: Psicología*. Editorial Grupo 5.

Piaget, J. (1948). The moral judgement of the child Glencoe. *Free Press. PUTALLAZ, M., & GOTTMAN, JM (1981). An interactional model of children's entry into peer groups. Child Development*, *52*, 986-994.

Ruiz, R. O., Sánchez, V., & Menesini, E. (2002). Violencia entre iguales y desconexión moral: un análisis transcultural. *Psicothema*, *14*(Suplemento), 37-49.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, cognition and personality*, *9*(3), 185-211.

Wallon, H. (1964). *Los orígenes del carácter en el niño*. Lautaro

Wang, X., Lei, L., Liu, D., & Hu, H. (2016). Moderating effects of moral reasoning and gender on the relation between moral disengagement and cyberbullying in adolescents. Personality and Individual Differences, 98, 244-249.

Wildermuth, C., e Souza, C. A. D. M., & Kozitza, T. (2017). Circles of Ethics: The Impact of Proximity on Moral Reasoning. *Journal of business ethics*, *140*(1), 17-42.

PREPARATORY STUDY OF INDIGENOUS EDUCATION THROUGH TRADITIONAL COLOR NAMES

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Abstract

Towards starting a new project of indigenous education through learning traditional color names, preparatory questionnaire survey was conducted. A hundred and thirteen undergraduates answered their knowledge of ten Japanese traditional color names, motivation of learning them, appreciation of cultural value of them, participants' domestic and international interests, and cultural items they think to be proud of. Results were analyzed by data-mining procedure using the Self Organizing Map (SOM) and 4-cluster solution was obtained, one of which was interpreted as 'tradition-conscious' group and the other one 'low motivation' group. In addition, correlation analysis showed possible sex difference in the way of understanding traditional color names. These findings may give us a clue to design next-step investigation for developing a model of efficient indigenous education program.

Keywords: Indigenous education, traditional color names, Self Organizing Map (SOM).

1. Introduction

With a rapid progress of globalization, Japanese government has made a shift in its language policy and decided to accelerate the beginning age of studying English in public schools from 5th graders to 3rd graders. The government, at the same time, emphasizes the importance of indigenous education to encourage Japanese children to take pride in their own language and traditions. The methods or contents of indigenous education, however, have not been specified.

This exploratory study aims to investigate cultural sensitivities of Japanese young generation especially focusing on the knowledge about Japanese traditional color names. Each of these color names has its own cultural background, and in some cases very long history. Unfortunately, however, they have not been taught in primary or higher educations for several decades, and young people have little knowledge about them. We thought the traditional color names would be excellent learning materials for Japanese indigenous education. As the first step of our project, we conducted a pilot survey to grasp the present situation of how young people know and think of these color names, together with their domestic and international interests and appreciation of Japanese culture in general.

2. Methods

2.1. Participants

A hundred and thirteen university students, 68 males and 45 females, answered the questionnaire. Their mean age was 19.9 years old (SD=.82).

2.2. Questionnaire

The questionnaire was comprised of five parts. Part 1 asked participants' knowledge of 10 Japanese traditional color names (see Table 1) using 4-point scale from '1: do not know the name' to '4: know the characteristics of the color.' Part 2 asked participants' motivation of learning these color names by three items, 'be intrigued,' 'want to know more,' and 'hope to use them usually.' These items were answered on 5-point scale, from '1: do not agree at all' to '5: completely agree.' Part 3 asked participants' opinion about the cultural value of these color names by five items, 'have high cultural value,' 'should be handed down to the future,' 'should be learnt by the nation,' 'should be used in daily life,' and 'be proud of them internationally.' These items were answered on the same 5-point scale as in Part 2.

Part 4 asked participants' domestic and international interests by five items each, 'love Japanese traditional culture,' 'love my hometown,' 'Japan is the best country,' 'be proud of being Japanese,' and

'hope to get job in my hometown' as the domestic interest items, and 'be intrigued with various foreign cultures,' 'hope to speak good English,' 'want to visit many countries,' 'want to make many foreign friends,' and 'hope to work abroad' as the international interest items. These items were answered on the same 5-point scale as in Part 2 and 3. Finally, Part 5 asked participants to choose items they think to be proud of as 'representatives of Japanese culture' (free multiple choice from 24 items listed in Table 3).

2.3. Data analysis

In each participant, ratings of 10 items in Part 1 were averaged to yield *Knowledge* score. Similarly, *Motivation*, *Value*, *Domestic* and *International* scores were derived from ratings in Parts 2, 3, and 4. The answers in Part 5 were coded in 0/1 manner (0=No, 1=Yes).

3. Results

3.1. Basic statistics

Table 1 shows *Knowledge* score of each color name examined (on its approximate background color) with its Munsell notation, as well as the total *Knowledge* score. Table 2 shows mean and SD (in parenthesis) of each score among all, male, and female participants. It was revealed that females rated significantly higher than males in *Knowledge* ($t=2.99$, $df=111$, $p=.003$) and *Motivation* ($t=3.25$, $df=110$, $p=.002$), and with marginal significance in *Value* ($t=1.97$, $df=109$, $p=.051$). Table 3 shows selection rate (%) of each item listed in Part 5 of the questionnaire.

Table 1. Color names used in the questionnaire, their Munsell notations, and Knowledge scores.

Color name	Oudo	Gunjo	Yamabuki	Enji	Uguisu	Toki	Komugi	Hada	Kohaku	Akane	Total (Knowledge)
Munsell notation	10YR 6/7.5	7.5PB 3.5/11	10YR 7.5/13	4R 4/11	1GY 4.5/3.5	7RP 7.5/8	8YR 7/6	5YR 8/5	8YR 5.5/6.5	4R 3.5/11	
Mean (SD)	3.47 (0.54)	2.93 (0.84)	3.06 (0.83)	3.15 (0.90)	2.50 (0.97)	1.41 (0.69)	2.90 (0.93)	3.86 (0.37)	2.62 (0.96)	3.12 (0.73)	2.90 (0.42)

Table 2. Mean and SD (in parenthesis) of each score among all, male, and female participants.

	Knowledge	Motivation	Value	Domestic	International
All	2.90 (.42)	3.28 (.95)	3.42 (.82)	3.84 (.65)	3.44 (.99)
Male	2.81 (.38)	3.05 (.86)	3.30 (.80)	3.84 (.60)	3.53 (.99)
Female	3.04 (.45)	3.62 (1.00)	3.61 (.82)	3.84 (.72)	3.30 (.97)

Table 3. Selection rate (%) of listed items in Part 5 of the questionnaire as 'proud Japanese culture'.

Foods		Contemporary culture		Traditional culture		Cultural resources	
Sushi	81.4	karaoke	28.3	sado	56.6	ninja	46.0
Tempura	46.9	anime	60.2	kado	44.2	samurai	43.4
sukiyaki	28.3	manga	58.4	shodo	57.5	jinja	51.3
Ramen	44.2	cosplay	12.4	kimono	68.1	jiin	37.2
Yakitori	20.4	game	38.9	haiku	28.3	jokaku	20.4
Onigiri	36.3	idol	6.2	noh	31.0	fujisan	43.4

3.2. Correlation analysis

Table 4 shows correlation coefficients among scores in all participants. *Knowledge*, *Motivation*, and *Value* correlated positively with each other. In addition, *Value* had a weak positive correlation with *Domestic*, which was entirely caused by the males' data ($r=.317$, $p<.01$, as compared to $r=.059$ in females' data) suggesting possible sex difference in the way of understanding traditional color names.

*Table 4. Correlation coefficients among scores. ** p<.01 * p<.05.*

	Knowledge	Motivation	Value	Domestic
Knowledge	-----			
Motivation	.430**	-----		
Value	.331**	.452**	-----	
Domestic	-.033	-.003	.197*	-----
International	-.046	-.123	.086	.128

3.3. Self organizing map (SOM)

The result was processed with a data-mining procedure to investigate relationship between scores of Parts 1, 2, 3, and 4 and selection of items in Part 5. The data mining procedure was based on the data-ordering and visualization capabilities of the Self Organizing Map (SOM) (Kohonen, 1995). Based on the principles of 'ordered vector quantization,' the SOM approach has the advantage that all input data are represented as vectors in a data-space defined by the number of variables for each sample. The SOM procedure is an exploratory data analysis technique whereby patterns and relationships within a database are internally derived based on measures of vector similarity.

The analysis revealed that 4-cluster solution is the optimal balance between cluster size and distinguishing features. Figure 1 shows a comparison of data profiles of only two of them, cluster 3 (30.1% of participants were included) and cluster 4 (4.4%), since the profiles of cluster 1 (34.5%) and cluster 2 (31.0%) did not have distinct features. In this figure, the ordinate indicates mean of each variable in the unit of SD of whole data set. Cluster 3 is characterized by relatively high *Knowledge* (0.69 as compared with -0.28, -0.27, and -0.57 of clusters 1, 2, and 4, respectively) and low means of item selection in general. Contrastingly, cluster 4 is characterized by low *Knowledge*, *Motivation*, and *Value*, and high means of item selection in general.

Figure 1. Profiles of clusters 3 and 4 obtained by data-mining procedure using the SOM.
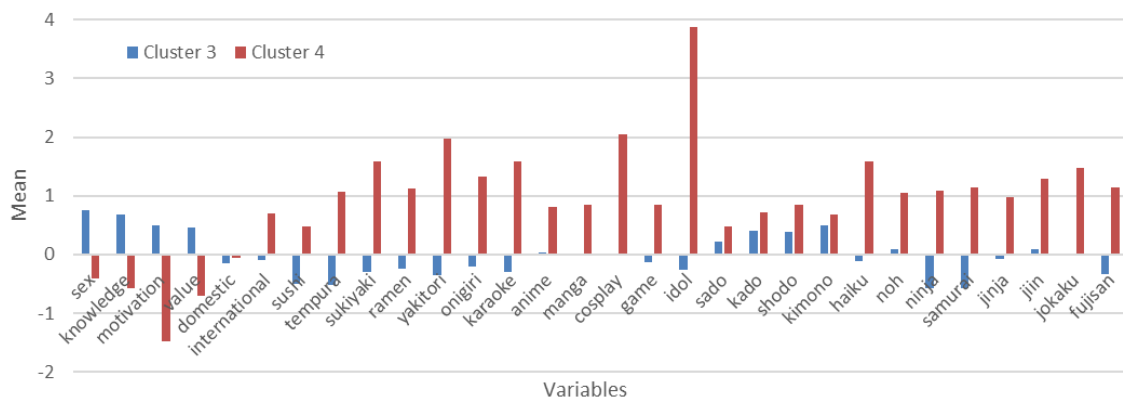
4. Discussion

As shown in Table 2, *Knowledge*, *Motivation*, and *Value* were found to be higher in females than in males. It may indicate females are more sensitive to the world of traditional beauty since they often experience it through wearing *Kimono* (traditional clothes), playing with *Chiyogami* (colourful and rich-patterned paper for being folded into figures), participating in cultural events such as *Hina-matsuri* (girls' festival displaying traditional dolls), and so on.

The clustering technique based on the SOM suggested that participants would be divided into four groups. Among them, two clusters shown in Figure 1 demonstrated contrasting characteristics. Those in the cluster 3 would be labeled as 'tradition-conscious' individuals, who have known well and are eager to know more about the Japanese traditional color names. They tend to be modest in choosing cultural items they think to be proud of, but seem to acknowledge the value of traditional things such as 'kimono' (traditional clothes), 'shodo' (calligraphy), and 'kado' (flower arrangement, also known as 'ikebana'). On the other hand, participants in the cluster 4, though statistically minority, would be labeled as 'low motivation' individuals. They tend to be positive for contemporary culture of Japan such as 'idol' (pop star) and 'cosplay' (costumed play typically performing anime-characters).

Above consideration is, however, far from decisive. Clusters 1 and 2, in which majority of participants were included, are still unclear in their characteristics. And the number of participants included in the cluster 4 is only five. This unclearness should be solved by increasing the number of participants of this survey in the future.

To summarize, this study revealed the present situation of what Japanese young people know and think about Japanese traditional and contemporary culture. Obtained information, along with the more accumulation in the future, would be useful for designing an indigenous-education program in Japan.

References

Kohonen, T. (1995). *Self-Organizing Maps*. New York: Springer.

EFFECTS OF USING VIDEO MODELLING WITH HANDHELD DEVICES ON SOLVING MATH PROBLEMS ABILITIES OF THE STUDENTS WITH INTELLECTUAL DISABILITY IN ELEMENTARY SCHOOLS IN TAIWAN

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Abstract

This study aimed to investigate the effects of using video modelling with handheld devices on solving math problems abilities of the students with intellectual disability in elementary schools. Two participants with intellectual disability placed in the resource classroom of an elementary school in Taichung City in Taiwan were selected in this study. The research method has used single subject designs. The independent variable was the video modelling teaching strategies and the dependent variable was the solving math problems abilities of students. The study lasted for about ten weeks, two times of intervention or observation per week. The collected materials were analysed through visual analysis.

The results of this study were as follows:

1. The video modelling with handheld devices give rise to the solving math problems abilities of the students with intellectual disability.

2. The video modelling with handheld devices maintain the solving math problems abilities of the students with intellectual disability.

According to results, discussions and limitations of this study, as well as some suggestions for the teaching and further studies were made.

Keywords: Students with intellectual disability, video modelling, solving math problems abilities.

THE USE OF IPAD FOR SUPPORTING INSTRUCTIONAL PRACTICES IN VOCATIONAL EDUCATION AND TRAINING CENTERS: SEARCHING FOR EFFECTS ON STUDENTS ACHIEVEMENTS

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Abstract

Despite the lack of studies that shows the effectiveness and sustainability of Educational Technologies, the emphasis on them has been encouraging a lot of Italian policymakers to adopt mobile devices (e.g. tablets) in instructional practices of education and training (Avvisati, Hennessy, Kozma, & Vicent-Lancrin, 2013; Pellerey, 2015). In the last years, in Italy, a lot of pilot projects on the use of technologies for supporting of instructional practices have been implemented in general school and Vocational Education and Training (VET) system. The present exploratory study aims to compare the learning outcomes of a group of VET students which used iPad in the classroom with a group of students of the same VET centers which did not use it. 400 VET students from five VET centers were involved. The researchers gathered data about the final exam of the third year students. Specifically, the grades of the common general subjects (i.e. italian, mathematics, and english) were collected. Gathered data were analysed with a quantitative approach. Results show that the correlation between the use of iPad and the students outcomes is different depending on the general subject taken into account. While there is no correlation with what concern italian and mathematics grades, the one with english subject seems to be better. The findings represent the exploratory phase of a wider research project. Thus, new data collection and analysis will be carried on in order to better understand which factors affect students' achievements when they are involved in instructional practices supported by technologies.

Keywords: Educational technologies, iPad, VET, students achievements, exploratory study.

1. Introduction

The efficacy and the sustainability of using ICT (Information and Communication Technologies) in supporting instructional practices has been widely investigated during last years. Over the milestone tertiary meta-analysis of (J. A. Hattie, 2009), in which was demonstrated that the use of technologies for supporting instructional practices has a neutral role in the students goals achievements, several contributions highlight the emerged issues about introducing and using ICT in educational contexts (Avvisati, Hennessy, Kozma, & Vicent-Lancrin, 2013; J. Michael & Ren, 2015; Pellerey, 2015b; Ranieri, 2011). Despite the research on Educational Technologies is still in an exploratory phase, also due to the continue innovations which constantly change this sector, the media emphasis given on them has been encouraging a lot of Italian policymakers to promote the systematic adoption of mobile devices in supporting teachers' instructional practices (MIUR, 2012, 2017; MPI, 2002). As the general school, the Italian initial Vocational Education and Training (VET) promoted several pilot projects with the aim to introduce ICT as a support for didactics and learning processes and good experiences have been identified (Franchini, 2014, 2015). The present exploratory study examines the learning outcomes of a students' group involved in a Pilot Project (PP) promoted by an Italian federation of VET centers, which provides for the use of the iPad in daily teaching and learning activities. The students involved in PP project used iPad' apps and digital contents instead of traditional school books and materials. The VET centers federation promoted the PP through organizational interventions, organizing ICT and pedagogical courses for teachers and families and improving the technological infrastructures of the centers. The VET federation and the participants wanted to be anonymous. Given the above, the aim of this study is to compare the grades of a group of VET students which used iPad in the classroom with a group of students of the same VET centers which did not use it. The assumption is that the students involved will reach higher grades than the students who were not involved in the PP.

2. Methods

2.1. Participants

Participants were 400 VET students belonging to 20 different classes of 5 VET centers; all the VET centers are located in northern Italy and are part of the same VET centers' federation. The students were enrolled in the last year of the "3 years qualification program" and they were following the mechanic or the electric course option. The target group (n=235) was involved in the PP, whereas the control group (n=165) was excluded from the PP.

2.2. Data collection

The learning outcomes analysed in this study (i.e. students grades) have been gathered from the multidisciplinary tests of the regional qualification exam. The assessment tests differed depending on the VET center, but were structured according to the same INVALSI (the National Institute of Educational System Assessment) criteria. Only the grading score obtained in the three common disciplines were gathered and compared: Italian language, mathematics and English language. Moreover, the used grade scales were different depending on the VET center, which is why these were all brought to 100/100 scale. Table 1 reports the students' attributes in detail.

Table 1. Groups characteristics.

Pilot Project	Group	Students	Disciplines
Yes	Target (1)	235	Italian language
			Mathematics
			English language
No	Control (2)	165	Italian language
			Mathematics
			English language

2.3. Data analysis and results

In order to compare the target group and control group, descriptive statistics and t-test were applied. JASP software was used to perform all data analysis. As reported in Table 2, results of descriptive analysis show that the mean of the students grades in the target group are higher only for the English Languages (M=63.50, SD=15.54). Countrarerly, the control groups of students engaged in Italian languages and Mathematics obtained higher grades (M=69.24, SD=17.74; M=62.48, SD=25.15) than the target group (M=66.06, SD=14.11; M=58.54, SD=18.14).

Table 2. Descriptives.

	Italian language		Mathematics		English language	
Group	1	2	1	2	1	2
Mean	66.06	69.24	58.54	62.48	63.50	60.95
Std. Deviation	14.11	17.74	18.14	25.15	15.54	16.19

The T-Test analysis was applied in order to verify the hypothesis: Group 1 > Group 2. Thus, as shown in Table 3, this hypothesis is confirmed only for English language course. This means that only in this discipline there is a significant variation (p= 0.056) of students grades between the two groups (i.e. student grades of target group in the English course are higher than the control group of the same discipline). The hypothesis has not confirmed for Italian languages (p= 0.976) and for mathematics (p= 0.965)

Table 3. Independent samples T-Test.

	t	df	p
Italian language	-1.992	398.0	0.976
Mathematics	-1.818	398.0	0.965
English language	1.590	398.0	0.056

3. Conclusions

Comparing the analysis, the results of the descriptives were confirmed by the T-Test. Having regard to this, technologies education does not seem to have a beneficial impact on the learning outcomes, except for the foreign languages. This situation, in broad terms, is similar to what Hattie (2009) had highlighted. According to this author, the use of educational technologies has not a direct ameliorative effect on specifics disciplines grades. Indeed, when technologies have been investigated by his tertiary meta-analysis, a low Effect Size (ES) has been found (i.e. *Use of calculators* ES= 0.27; *Computer assisted instruction* ES= 0.37, *Web-based Learning* ES= 0.18 in the range of -0.2 to 1.2). According to these considerations, two new research questions emerge: 1) why the use of iPad has an effect only for foreign languages disciplines? 2) Are there other areas in which the use of educational technologies could have an improving effect? Hattie himself, together with other authors (Bonaiuti, Calvani, Menichetti, & Vivanet, 2017; Pellerey, 2015a; J Hattie, 2012; John Hattie & Yates, 2013), suggests that the improvement effect of the use of ICT in the educational field could be obtained only in those cases where the learning context conditions are set in order to effectively promote the self-regulation of students. This positive effect of educational technologies could be also related to technological and pedagogical skills of teachers.

References

Avvisati, F., Hennessy, S., Kozma, R. B., & Vicent-Lancrin, S. (2013). *Review of the Italian strategy for digital schools. OECD Education Working Papers* (Vol. 90). https://doi.org/10.1787/5k487ntdbr44-en

Bonaiuti, G., Calvani, A., Menichetti, L., & Vivanet, G. (2017). *Le tecnologie educative* (1st ed.). Roma: Carocci editore.

Franchini, R. (2014). La tecnologia al servizio dell'educazione ovvero l'educazione a guida dello sviluppo tecnologico nella scuola (e non solo). *Rassegna CNOS*, *3*, 73–90.

Franchini, R. (2015). L'educativo digitale: esperienze internazionali a confronto. *Rassegna CNOS*, (2), 53–65.

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. Retrieved from http://books.google.com/books?hl=en&lr=&id=vSoUT6PXdoIC&oi=fnd&pg=PR3&dq=Visible+Learning+for+Teachers+:+Maximizing+Impact+on+Learning&ots=XIQe1qxaNW&sig=GtGfY0zK-AyEhlMTEScEjzT1u4o

Hattie, J. A. (2009). *Visible learning: A synthesis of 800+ meta-analyses on achievement*. Abingdon: Routledge.

Hattie, J., & Yates, G. C. R. (2013). *Visible Learning and the Science of How We Learn*. Routledge. https://doi.org/10.4324/9781315885025

J. Michael, S., & Ren, Y. (2015). Hystory of Educational Technology. In J. M. Spector (Ed.), *The SAGE Encyclopedia of Educational Technology* (pp. 335–345). 2455 Teller Road, Thousand Oaks, California 91320: SAGE Publications, Inc. https://doi.org/http://dx.doi.org/10.4135/9781483346397.n147

MIUR. (2012). Piano Nazionale Scuola Digitale. Retrieved from http://schoolkit.istruzione.it/pnsd/2-1-la-storia-del-pnsd-e-dei-suoi-investimenti/

MIUR. (2017). LaBuonaScuola. Retrieved May 11, 2017, from https://labuonascuola.gov.it/

MPI. (2002). Piano Nazionale di Formazione sulle Competenze Informatiche e Tecnologiche del Personale della scuola. Retrieved March 10, 2017, from http://archivio.pubblica.istruzione.it/news/2002/cm55_02.shtml

Pellerey, M. (2015a). *La valorizzazione delle tecnologie mobili nella pratica gestionale e didattica dell'istruzione e formazione a livello di secondo ciclo. Coordinamento scientifico.* Roma: Centro nazionale opere salesiane.

Pellerey, M. (2015b). Uso didattico delle tecnologie mobili e risultati di apprendimento: alcuni apporti derivati da ricerche internazionali. *Rassegna CNOS*, *2*, 39–51.

Ranieri, M. (2011). *Le insidie dell'ovvio. Tecnologie educative e critica della retorica tecno centrica*. Pisa: ETS.

INVESTIGATION OF USING VIDEO MODELING TO IMPROVE THE MATH PROBLEMS SOLVING SKILLS OF INTEGER MULTIPLICATION AND DIVISION OF THE STUDENTS WITH LEARNING DISABILITIES IN ELEMENTARY SCHOOLS IN TAIWAN

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Abstract

The aim of this study was to investigate the effect of video modeling on math problems solving skills of integer multiplication and division of Students with learning disabilities in elementary school. This study adopted multiple probe design across subjects of single subject experimental design. Three participants with learning disabilities were third grade in elementary school. The independent variable was Video Modeling. The dependent variable was the correct items that students answered on the Assessment of integer multiplication and division word problems. The content of instruction includes four units.

All collected data were analyzed by visual analysis and the C statistic. In addition, the results of an investigation form teacher and participants, and researcher's records were used for the supplementary explanations of results. The results of this study were concluded as follows:

1. Video modeling had immediate effective for the elementary school students with learning disabilities to solving word problems of integer multiplication and division.
2. Video modeling had maintenance effective for the elementary school students with learning disabilities to solving word problems of integer multiplication and division.
3. Video modeling had generalization effective for the elementary school students with learning disabilities to solving word problems of integer multiplication and division.
4. Teacher and participants all held positive attitudes toward using video modeling in the instruction.

Recommendations for future practice and research was provided.

Keywords: Video modeling, learning disability, integer multiplication and division word problems.

A QUIZ TOOL FOR A GENERAL LOCATION-BASED M-LEARNING FRAMEWORK

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Abstract

Nowadays, most educational spaces such as museums, botanical gardens, and cultural heritage sites are using digital technologies to provide an enhanced experience for visitors. Technologies such as mobile apps, interactive electronic displays, augmented reality systems and robotic guides can be very effective in supporting learning by providing supplemental information and enabling novel ways for visitors to engage with the content. On the other hand, these systems may require special equipment, be expensive to develop and install, and are most often purpose-built to support just a single space. We have taken a different approach and developed a general extensible framework for building location-based mobile learning (m-learning) systems. The framework supports various object/place identification methods (QR code, NFC tag, Bluetooth beacon, object recognition), numerous types of media, and multiple content languages and user levels (e.g., adult, child). In this poster, we introduce and demonstrate a new quiz feature for the framework. The quiz system includes a web-based content management system for administrators to enter multiple questions and answers for each object or display. An Android-based mobile app on the visitor's own phone keeps track of the objects and areas visited, and then serves the visitor a personalized quiz. This quiz feature may be used to incentivize user interaction, to assess learning, and to gather data on visitors' preferences and behavior. However, its primary novelty is in its generic nature: it requires no special equipment, and the same system can be deployed at any site; only the content changes.

Keywords: m-Learning, location-based systems, museum technology, mobile computing.

1. Introduction

With the goal of providing a richer visitor experience, most informal educational spaces, such as museums, botanical gardens and cultural heritage sites, have steadily expanded their use of digital technologies. Tools like mobile apps, interactive displays, augmented reality systems and robotic guides can be very effective in supporting learning by providing supplemental information and enabling novel ways for visitors to engage with the content. However, these systems may require special equipment, be expensive to develop and install, and are most often purpose-built to support just a single space. For example, the Smithsonian Institution has over thirty mobile apps (Smithsonian, 2018). Some of them are general learning apps or games, but at least fifteen of them can be considered companions to collections or galleries in the museums. Unfortunately, too much, or inconvenient, technology can sometimes be overwhelming for users, instead of engaging or helpful.

We have taken a different approach and developed a general extensible framework for building location-based mobile learning (*m-learning*) systems (Rizvi, 2016). The framework supports various object/place identification methods (QR code, NFC tag, Bluetooth beacon, object recognition), numerous types of media, and multiple content languages and user levels (e.g., adult, child). The same mobile app can support different configurations and content with a consistent interface, and new features added to the framework become available in all apps.

In our poster presentation, we introduce and demonstrate a new quiz feature for the framework. The quiz system includes a web-based content management system for administrators to manage the questions and answers for each object. A mobile app tracks the objects that a user interacts with and the areas she visits, and can present the visitor with a personalized quiz based on what she has seen. This quiz feature may be used to incentivize user interaction, to assess learning, and to gather data on visitors' preferences and behavior. However, its primary novelty lies in its generic nature: it requires no special equipment, and the same system can be deployed at any site -- only the content changes.

2. Related work

Recent works on integrated spaces offer various different ways to enhance visitors' experiences at museums and other informal learning spaces. For example, guests of the Museum of Natural History of La Rochelle can play a game with a NAO robot to get a better understanding of the museum artifacts (Mondou, 2018). In an interactive quiz game, the NAO asks a question that requires the player to explore the museum in order to find the answer. Although the robots may seem very interesting and, as the authors suggest, such games do not require visitors to bring their own devices, it is quite challenging to adjust a robot's behavior to suit different types of visitors. Furthermore, a large team of fairly expensive robots (~$7000/ea) may be difficult to acquire and maintain.

Another approach, suggested by Choi and Kim (2017), combines a virtual reality experience using a head-mounted display (HMD) with Bluetooth beacon technology. The benefit of this approach is that it offers full immersion in the virtual world and, as users walk through the museum halls, different beacons will send relevant content to the visitors' devices according to their location. On the other hand, it may be uncomfortable wearing a HMD during a long visit, and it could potentially be the cause of injuries as people do not clearly see the real world and may become disoriented or ill during the experience. Again, this configuration could become expensive, as any devices loaned to visitors would require significant maintenance.

The benefits of using Bluetooth beacons to enhance visitors' experience is also described in the work by He (2015), where the authors suggest using the beacons to send push notifications about the nearest exhibitions and to track users' behaviors to personalize the information. This approach is similar to our own, which incorporates Bluetooth beacons as just one of the possible location and object identification methods.

An application that uses a combination of augmented and virtual reality, the Mixed Reality Interactive Tour System, was proposed to guide guests during their visit to a museum (Lee, 2017). The system uses gesture recognition and allows users to interact with the 3D images of artifacts. As with the work on virtual reality mentioned above, the users will need a HMD, for example, Google's *Cardboard*, to use the system, which may cause some inconvenience.

3. System design

Our new quiz system builds on the existing m-learning framework's three main components: the web interface for content management, the database backend, and the mobile app (currently available only for the Android platform). The web interface for the quiz functionality allows a content manager to enter one or more multiple choice questions for each object or area in the database. Each question has a user level setting (e.g. novice, expert) and questions can be entered in any language. The backend system manages the database and supplies the required data to the mobile app.

The mobile app's default functionality allows a visitor to interact with whatever object/place identifiers are integrated into the environment, whether they are QR codes, NFC tags, or Bluetooth beacons. Each interaction with one of these identifiers allows the user to explore more information about the object or area. To begin the quiz functionality, the user must select '*Start Tour*' in the app. All object interactions that occur after starting a tour are recorded. When the user selects '*Start Quiz*', a quiz is constructed using randomly-selected questions for each of the objects with which the user has interacted since starting the tour. The questions are selected to conform to the user's default settings for language and level. The ability to control the number of objects covered by a quiz (using the *Start Tour* functionality) gives the app the flexibility to support different types of users and quizzes. Other quiz settings are the number of questions per object and whether or not the correct answer is revealed to the user after each question is answered. In Table 1 below, four examples of possible system use-cases are illustrated with a description of the type of user and what quiz settings might be appropriate in each case.

Table 1. Example use-cases for the quiz system.

User	Quiz purpose	Questions per object/area	Quiz timing	Answers given
Casual visitor to a historic site	Fun	1-2 questions	At each object/area visited	Yes
Schoolchildren's class visit to a museum	Incentive to pay attention	1-2 questions	End of the tour	No
Art history student visiting an art gallery	Exam preparation	Numerous/all	Brief intervals	Yes
Botany students at the university conservatory	Assessment	Numerous	End of the tour	No
Casual visitor to a museum	Satisfaction survey	1	Variable	No

4. Conclusion

We have introduced and demonstrated a new quiz feature for a generic m-learning framework. The framework allows engaging, flexible, and consistent learning tools to be developed quickly and easily for all types of learning spaces, which themselves can be instrumented in a variety of different ways. The quiz tool has the flexibility to meet the varied requirements of a learning space's staff and visitors. The current implementations have a simple web interface for administrators and staff, and an Android app for visitors. As of this writing, we have not done a formal evaluation of the tools. However, we are planning two different trials, one at the National Museum of the Republic of Kazakhstan with quizzes for schoolchildren, and the other at our university with quizzes as part of recruitment days and freshman orientation activities.

References

Choi, H., Kim, S., (2017). A content service deployment plan for metaverse museum exhibitions – Centering on the combination of beacons and HMDs. *International Journal of Information Management,37 (1), Part B*, pp 1519-1527. doi: 10.1016/j.ijinfomgt.2016.04.017

He, Z., Cui, B., Zhou, W., Yokoi, S., (2015). A proposal of interaction system between visitor and collection in museum hall by iBeacon. *10th International Conference on Computer Science and Education, (ICCSE 2015),* pp 427-430. doi: 10.1109/ICCSE.2015.7250283

Lee, K., Chen, Y., Hsieh, H., Chin, K., (2017). Application of Intuitive Mixed Reality Interactive System to Museum Guide Activity. *IEEE International Conference on Consumer Electronics - Taiwan (ICCE-TW).* doi: 10.1109/ICCE-China.2017.7991093

Mondou D., Prigent A., Revel A. (2018) A Dynamic Scenario by Remote Supervision: A Serious Game in the Museum with a Nao Robot. *In: Cheok A., Inami M., Romão T. (eds) Advances in Computer Entertainment Technology. ACE 2017. Lecture Notes in Computer Science, vol 10714. Springer, Cham.* doi: 10.1007/978-3-319-76270-8_8

Rizvi, M. A. E., Toleuov, A., Khaitov, D. & Baitursinov, S. (2016). A general extensible framework for mobile location-based information systems. *Proceedings of the IEEE 10th International Conference on the Application of Information and Communication Technologies (AICT), Baku.* doi: 10.1109/ICAICT.2016.7991731

Smithsonian Mobile Applications. (n.d.). Retrieved April 19, 2018 from https://www.si.edu/mobile

RESEARCH ON TEACHING AND LEARNING IN SICHUAN UNIVERSITY'S IMMERSION PROGRAM, CHINA

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Abstract

University Immersion Program (UIP) of Sichuan University (SCU), has been held six consecutive years since 2012. This program is a significant step for SCU to achieve the goal of building a world-class university. UIP, the two-week short-term program has been playing a major role in implementing internationalized education and nurturing globally competitive talents through inviting foreign professors or specialists from world-ranking university or institutes to offer English-based specialized or general courses and launching international camps these years. Research methods such as questionnaire survey were used to explore current situation and influenced factors of teachers' efficacy and undergraduates' internationalized quality. In order to research on teaching and learning of UIP, All foreign teachers taught in 2016 UIP and 839 undergraduates of 2017 UIP randomly selected are research objectives. Findings reveal the following facts. Firstly, teachers' general efficacy is higher than teachers' self-efficacy and their teaching efficacy is significantly influenced by their teaching age, job title, and whether they have participated in previous UIP. Secondly, at the end of UIP, there are significant differences between the students' internationalization attitude, internationalization knowledge, and internationalization ability. Corresponding countermeasures are proposed to promote teaching and learning of UIP, such as optimize the curriculum; improve the organization and strengthen the UIP management; improve teaching management and ensure implementation; monitor the quality of teaching.

Keywords: University immersion program, teachers' efficacy, students' internationalized quality.

1. Introduction

In the age of knowledge-based economy, the universities that have gradually stepped into the social center conform to the trend of globalization. With internationalization of higher education becoming an inevitable choice, universities and colleges try to meet the needs of the times and seek their own development. International exchanges and cooperation in colleges and universities are regarded as the main ways of internationalization of higher education, among which Summer School flourishing as a new form in the field of Chinese higher education, firstly held by Peking University and Shandong University, has been developed rapidly and exerting great influence in China over the past thirteen years.

As a Research University located in the west of China, Sichuan University has mainly adopted the "go out" talents training strategy before 2012 but had a limited radiation. In order to realize the goal of building a world-class university and training internationalized talents, Sichuan University Immersion Program (abbreviated UIP), a kind of summer school as well as one of a typical representatives of "bringing in" strategy. UIP has been held since 2012 and is a third short semester inviting foreign professor from world-ranking university to conduct English-based curricula. Various activities like innovation and entrepreneurship projects and international exchange camps are held in these two weeks to help undergraduates' expanding global horizon and cultivating internationalized quality without going abroad, which is a practice of internationalization at home or internationalization at campus according to Knight (1997). Since the project was successfully held for six times, it has accumulated rich experience in teaching and learning of summer school but still exists some problems.

2. Research Design

The article mainly explores current situations and determinants of teachers' efficacy and undergraduates' internationalized quality through questionnaire survey of the latest two UIP.

2.1. Research Objectives

Teachers and students are the two core elements of education. In 2016 UIP all of the foreign teachers were surveyed and in 2017 UIP 839 undergraduates were randomly selected to be investigated for further exploring UIP teaching determinants and learning outcomes.

2.2. Research Methods

Literature study, case study, and questionnaire survey are used to in this article. First, Literature research helps to understand the research status, clarify relevant concepts and grasp the development trends of the research subject by laying a solid foundation of the thesis. Second, Case study is a main research method of this paper. Taking Sichuan University' Immersion Program as a research case, it focuses on teaching influence factors and learning effectiveness. Finally, two types of questionnaires were designed respectively to understand the current situation and influencing factors of teachers' efficacy and students' internationalized quality training, discovered the problems in teaching and learning, and proposed management measures.

2.3. Empirical Investigation

In terms of foreign teachers' efficacy, questionnaire was designed based on Tschannen-Moran (2001) teacher efficacy scale (TSES) and revised according to the specific situation of Sichuan University UIP. The questionnaire consists of two parts and contains 31 questions totally: basic information and foreign teacher efficacy including teachers' self-efficacy and teachers' general efficacy. 165 foreign teachers in total were invited in 2016 UIP, so 165 copies of questionnaires were issued among which 151 were valid; the effective collection rate is 91.51%. The second part of the questionnaire has a Cronbach's Alpha value of 0.891, indicating that the scale has a high degree of internal consistency and high reliability.

As for undergraduates' internationalized quality including students' internationalization attitude, internationalization knowledge and internationalization competence, a survey scale based on Bryam's ICC multi-dimensional model and the specific situation of UIP was designed to. The questionnaire consists of two parts and contains 41 questions: the first part reflects the basic situation of students through 12 questions; the second part mainly adopting Likert Scale five scoring method to explore undergraduates' internationalized quality as the learning outcome of UIP. In 2017, there are 256 courses with a total number of 18,953 students. 839 students were selected randomly and the same numbers of questionnaires were sent out. 755 copies were collected, of which 741 were valid questionnaires and the effective rate was 98.15%. The final results shows that the Bach Alpha coefficient is 0.883, the KMO test is 0.906, and the Bartlett's Test of Sphericity is significant which all indicates the questionnaire being highly reliable and valid.

3. Findings and Discussions

On the one hand, the results of the survey shows those UIP foreign teachers as a whole are mainly well educated male with rich teaching experience and high titles. Half of the teachers have overseas teaching experience. Foreign teachers account for 2/5 having experience of the past UIP. For one thing, the overall mean value of foreign teachers' self-efficacy is 3.76. In this part, teachers have the highest self-efficacy in classroom organization and management as well as teacher-student exchange while have a relatively low self-efficacy in preparation of courses and student participation under English-teaching environment. For another, the average teacher's general efficacy is 3.9321, higher than the average value of teacher's self-efficacy. Meanwhile, the results of the independent sample T-test show that there is no difference in teacher' self-efficacy between gender, education background, and whether there are teaching experience of overseas project; however, teachers' teaching age, job title, and whether they have participated in previous UIP has a positive and significant effect in teachers' self-efficacy.

On the other hand, the cultivation of undergraduates' internationalized quality is influenced by factors as household registration, parental educational level, students' English level, students' overseas experience, curriculum-choosing reasons and their expectation of UIP. In addition, curricula evaluation has a part mediating effect in courses implementation and internationalized quality cultivation. However, students' gender, grade, major, professional category, achievement level had no significant influence on their internationalized quality nourishing. Before and after the UIP, there are significant differences between the students' internationalization attitude, internationalization knowledge, and internationalization ability. The average value of three parts of internationalized quality shows a decreasing trend from the attitude to the ability. After the end of UIP, there is a positive growth in students' internationalization attitude and internationalization knowledge. On the whole, there are four problems in the operation of UIP: students have a relatively weak sense of global citizenship, the

internationalization of students' professional knowledge needs to be further enhanced, undergraduates' English ability needs to be improved, and UIP management needs to be perfected.

4. Suggestions

The following suggestions are proposed in view of the problems that exist between teachers and students in UIP.

First, optimize the curriculum. Curriculum is a key element to UIP and directly determines its effectiveness. On the one hand, curriculum objectives must be clarified. UIP should be combined the training goal of cultivating talents with broad international outlook and so as to improve students' internationalized quality. On the other hand, a flexible course screening mechanism would be developed to ensure the construction and the screening of the curriculum system.

Second, improve the organization and strengthen the UIP management. The Academic Affairs Office as the main body can establish a permanent working group, which is fully responsible for UIP management, the International Offices, colleges and the academic committee are working in a reasonable division of labor to do well in the implementation of UIP.

Third, improve teaching management and ensure implementation. UIP should set a reasonable class scale and equip with appropriate teaching equipment and facilities. Before class, the relevant teaching information should be provided by Academic Affairs Office.

Last, monitor the quality of teaching and learning. A dynamic evaluation mechanism should be established to evaluate quality of teaching and learning. In addition, relevant materials of the curriculum should be documented as one of the reference basis for future UIP screening teachers and courses.

References

Byram, M. (1997). *Teaching and Assessing Intercultural Communicative Competence*. Clevedon: Multilingual Matters.

Knight, J. & Hans. DW. (1997). *Internationalization of Higher Education in Asia Pacific Countries*. Amsterdam, Netherlands: European Association for International Education.

Tschannen-Moran, M, & Hoy, AWH. (2001). Teacher efficacy: capturing an elusive construct e. *Teaching & Teaching Education*, 783-805, 17(7).

SENSITIZATION TRAINING AND HEALTHY ENVIRONMENTS: IMPACTS PERCEIVED BY THE STAKEHOLDERS

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Abstract

Obesity is a growing problem that is directly related to a sedentary lifestyle and an inadequate diet (WHO, 2014), and influenced by physical, sociocultural, economic and political environments (Hill et al., 2003). To raise awareness of the issue, numerous initiatives in health education whose sensitization sessions were held across Quebec to sensitize stakeholders to ways of facilitating healthy environments to promote an active lifestyle and healthy food choices. Using a qualitative approach, the 2006 model of Kirkpatrick and Kirkpatrick served as a theoretical and methodological guide to the study. The objectives were to 1) explore the knowledge and skills acquired during the sessions and 2) examine the transfer from sessions to concrete actions for fostering environments conducive to healthy lifestyles. Individual interviews were conducted with 52 stakeholders (F=41; M=11). The results reveal, first, that most of the stakeholders consolidated or even improved their knowledge and skills and were better able to recognize the four types of environments in their respective workplaces. They developed a common vocabulary and a better understanding of the relationship between environments and lifestyles. Second, the transfer was more problematic because the concerted actions needed to facilitate healthy environments are complex. These results will be discussed in light of Kirkpatrick and Kirkpatrick's four-levels pyramid, in which the fourth optimal level - organizational results - presents greater challenges in terms of impacts. The sensitization sessions can be viewed as a societal project encouraging influential stakeholders to develop environments favourable to healthy lifestyles and as a health education initiative.

Keywords: Healthy environments, sensitization sessions, stakeholders, impacts.

1. Introduction and context

The World Health Organization (WHO) predicts that rates of obesity and overweight will continue to rise from now to 2030 (WHO, 2014). Although obesity is a mltifaceted health problem, the literature leaves no doubt that the two main reasons for the epidemic are overeating and a sedentary lifestyle (WHO, 2014). Many experts argue that environments - physical, economic, sociocultural and political - play a greater role than biological factors in this increase (Booth *et al*., 2005; Hill *et al*., 2003). The rising prevalence of obesity has led to an ongoing search for effective interventions in weight gain prevention along with strategies to promote health. A variety of interventions promoting healthy environments have been implemented worldwide to induce influential stakeholders to facilitate environments more conducive to healthy lifestyles (Booth *et al*., 2005; WHO, 2014).

Thanks to a joint initiative by *Québec en Forme* and the *Comité québécois de formation sur les saines habitudes de vie,* an intervention was deployed across Québec to sensitize stakeholders in various sectors to the need for environments encouraging routine physical activity and healthy food choices. The intervention was unique in that it comprised 1) a sensitization phase for stakeholders, 2) the promising combination of four favourable environments, 3) the power of influence of sensitized stakeholders, and especially, 4) a vast population approach. Some 15,000 stakeholders from the school, municipal, community and health sectors were sensitized during over 1,000 sessions (~ 3 hrs/session) conducted between September 2012 and December 2015. In view of the scope of the operation, the present study concentrates on evaluating these sessions.

2. Conceptual framework

The 2006 Kirkpatrick Evaluation Model involving 4 levels of impacts served as a theoretical and methodological guide for this study. It proved to be the one best suited to our objectives since it appears no other model has been developed for sensitization training. Regarding the impacts on the work by sensitized stakeholders, we focused on the acquisition of knowledge and skills (level 2) and the transfer of theory into practice (level 3).

3. Objectives

The objectives were to 1) explore the knowledge and skills acquired during the sessions and 2) examine the transfer from sessions to concrete actions for fostering environments conducive to healthy lifestyles.

4. Method

We privileged a qualitatative approach by employing semi-directed telephone interviews to easily reach participants residing throughout the 17 administrative regions of Québec. The personal interview is a highly useful tool for understanding an indivdual's point of view, grasp of experience and insight for purposes of in-depth analysis (Baribeau & Royer, 2012). Direct access to stakeholders' lived experience is precisely what enables a deeper understanding of a situation (Savoie-Zajc, 2009; Yin, 2014). Interview content was developed based on the Kirkpatrick model (2006). The phone interviews, which lasted about 17 minutes, were audio-recorded, transcribed and analyzed using NVivo 8 software. Two analysts intercoded the data with 98% agreement (Yardley, 2008). The 52 study participants (F=11, M=41; $\overline{X}$=43 years) who had taken part in a training session included stakeholders from several professional sectors (school, municipal, community and health).

5. Findings

Findings are presented in keeping with the objectives of the study. First, as regards the knowledge and skills acquired during sensitization training, most participants either learned about the existence of the four favourable environments or honed their understanding of them. The theoretical concepts discussed offered a more nuanced knowledge of favourable environments, and the related concrete examples enabled participants to better grasp the importance of their role in this respect. The session was apparently an opportunity to learn a common vocabulary deemed useful within the context of their work. However, the information acquired seems to have been less significant for stakeholders from the health sector.

Second, the transfer of knowledge and skills into concrete actions appears possible, albeit complex. On one hand, the vast majority of participants were able to influence their environments to a greater or lesser extent. Examples include improvements in cafeteria and school canteen menus, walking initiatives, etc. On the other hand, organizational challenges proved to be hurdles, notably for stakeholders working in compartmentalized frameworks without concertation committees or with supervisors having little interest in change.

6. Discussion

Consistent with level 2 of the Kirkpatrick model, our findings show that the sensitization sessions regarding favourable environments sharply improved the participants' knowledge and skills. As well, the sessions enabled them to accurately distinguish the four environments related to lifestyles. The importance of a common vision also becomes obvious in the deployment of every new population initiative (Savoie-Zajc, 1993).

Progress was somewhat more modest regarding concrete reinvestment in the professional sectors, as suggested in level 3 of the Kirkpatrick model. We maintain, therefore, that a second training phase is needed to facilitate concrete actions - and even 4th-level impacts relating to organizational performance - in these sectors. In other words, we suggest that future training initiatives target potentially improved impacts with an eye to developing expertise in key stakeholders with strong powers of persuasion or influence (e.g., municipal sector).

Our study gives rise to two questions: Is a large-scale sensitization session needed prior to every training activity intended for a targeted public? Can a sensitization phase be a prelude to a second phase aimed at concrete, long-term impacts in the field? We rely on the International Conference on Education and New Developments 2018 to discuss these issues.

7. Conclusion and acknowledgements

We believe that the present sensitization approach can serve as a model in other professional fields, insofar as it offers a better understanding of the mechanics and impact of sensitization training as a strategy for education, particularly health education. Environments should also be taken into account and studied to determine the type of intervention most likely to affect people's health behaviours. In conclusion, the improvement of lifestyles and the creation of environments facilitating the adoption or maintenance of healthy lifestyles should be responsibilities shared by all!

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References

Baribeau, C., & Royer, C. (2012). L'entretien individuel en recherche qualitative: usage et mode de présentation [Individual interview in qualitative research: use and manner of presentation]. *Revue des sciences de l'éducation, 38*(1), 23-45.

Booth, S.L., Sallis, J.F., Ritenbaugh, C., Hill, J.O., Birch, L.L., Frank, L.D., & Hays., N.P. (2001). Environmental and societal factors affect food choice and physical activity: Rationale, influences, and leverage points. *Nutrition Reviews*, *59*(3), 21-39.

Booth, K.M., Pinkston, M.M., & Poston, W.S. (2005). Obesity and the built environment. *Journal of American Dietetic Association, 105*(5 Suppl 1), S110-S117.

Geoffrion, P. (2003). Le groupe de discussion [The focus group]. In B. Gauthier (Ed.), *Recherche sociale. De la problématique à la collecte de* données (pp. 333-356). Québec: Presses de l'Université du Québec.

Kirkpatrick D.L., & Kirkpatrick J.D. (2006). Evaluating training programs: the four levels. San Francisco, CA: Berrett-Koehler Publications Ltd.

Hill, J.O., Wyatt, H.R., Reed, G.W., & Peters, J.C. (2003). Obesity and the environment: where do we go from here? *Science, 299,*853-855.

Savoie-Zajc, L. (1993). *Les modèles de changement planifié en éducation* [Models for planned change in education]. Québec : Les éditions Logiques.

Savoie-Zajc, L. (2009). L'entrevue semi-dirigée [The semi-directed interview]. Dans B. Gauthier (Éd), *Recherche sociale: de la problématique à la collecte des données* (5ᵉ éd., pp. 337-360). Québec, QC: Presses de l'Université du Québec.

World Health Organization (2014). Obesity and overweight Retrieved February 21, 2016. http://www.who.int/mediacentre/factsheets/fs311/fr/.

Yardley, L. (2008). Demonstrating validity in qualitative research. In J.A. Smith (Dir.). *Qualitative psychology: A practical guide to research methods* (pp. 235-251). London : Sage.

Yin, R.K. (2014). *Case study research. Design and methods* (5ᵗʰ ed.). Thousand Oaks, CA: Sage Publications.

AN INSTITUTIONAL STRATEGY TEMPLATE TO OPTIMALLY ENHANCE THE EMPLOYABILITY OF STUDENTS THROUGH WORK INTEGRATED LEARNING

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Abstract

This article describes the development of an institutional strategy template that can be used to optimally enhance the employability of students through Work Integrated Learning (WIL). Literature contain numerous studies which confirm the link between Work Integrated Learning (WIL) and the employability of students. What is not clear is what can be done to ensure that the contribution of WIL towards the employability of students is optimised. This article represents the results of a study at a university in South Africa to answer this question. A quantitative study was conducted and includes the views of 118 employers as the ultimate judges of employability. It was empirically determined that WIL enhances the employability of students together with an ideal bucket of skills and qualities that employers need together with specific recommendations on how to optimise the contribution of WIL to attain those skills and qualities.

Based on these results a decision was taken at the Central University of Technology, Free State (CUT) in South Africa that all learning programmes would have a compulsory component of WIL in future. The goal was therefore to analyse and structure the WIL component in such a way that the employability of CUT students could be optimised through the comprehensive and effective application of WIL, for which the development of an institutional strategy template for WIL was required. Such a template was developed and is presented in the article.

Keywords: Work-integrated learning, employability, strategy, development, students.

1. Introduction

This article is presented within the framework of the three main issues of investigation, namely Work Integrated Learning (WIL), employability and strategy. These concepts will thus be firstly defined to provide the necessary context for the development of an institutional strategy template based on an analysis of the views of employers on how to optimally enhance the employability of students through WIL.

2. Design

A quantitative study was conducted since, according to Williams (2006), a quantitative study is about determining the relationship between variables, i.e. independent (IV) and dependent variables (DV). In this case, the IV is WIL and the DV the employability of students.

The target population comprised all the employers used for WIL on the WIL database of the university. The target group was the active employers for WIL during the 2011–2015 periods, namely 694. The sample size was determined as a percentage of the active employers by means of the sampling method of Stoker (1981) whereby the size of the sample should be calculated as $\sqrt{(N/20)}$ x 20. In accordance with this formula, the sample was 118, as determined from the target group of 694 (N).

3. Objectives

The following objectives were set namely, to determine the skills and qualities required and developed through WIL related to employability, to ascertain what specifically about WIL enhances employability, to receive recommendations from employers on a strategy to follow on how to use and structure WIL to optimally enhance the employability of students and to develop a strategy template to optimally enhance the employability of students through WIL.

4. Methods

A questionnaire with close-ended questions was selected because it is widely used and thus enhances credibility, together with validity and reliability; it can be administered without the presence of the researcher to enhance objectivity; and is comparatively straightforward to analyse (Croasmun & Ostrom 2011). An internet-based survey was used to distribute and collect the responses which were captured in table format from where it was possible to produce both descriptive and inferential statistics (My Market Research Methods 2011).

5. Discussion

The analysis of employers' views and the template developed, need to be interpreted based upon the following definitions of the key concepts adopted for this investigation based on the literature reviewed.

WIL is defined (authors' definition deduced from literature) as a tripartite curriculum strategy that enhances the value of learning through the alignment and integration of academic learning with learning in the workplace. Employability includes many aspects such as the skills and abilities that allow one to be employed (Cambridge Dictionaries Online 2014) as well as to maintain employment and be able to move around within the labour market (Bologna Process 2010). In adopting a definition for the purpose of this investigation, Helyer (2007) aptly concludes that employability is in the end about those elements that: "make a person a useful, and therefore, desirable employee". Based on key components identified in the literature studied, strategy can be defined as an understanding of where you are, a clear sense of where you want to end up, an assessment of what stands in between, a decision about how to approach the challenge and a detailed course of action to undertake (Arauz 2014).

94/118 responses were received from employers, thus a response rate of 79.66%. It was necessary to determine whether empirical evidence existed at the university and to substantiate the evidence found in the literature reviewed that WIL does enhance the employability of students. Employers were therefore requested to indicate the average number of the university's students accommodated for WIL during the period of 2011-2015 and how many of these students were offered permanent positions. In addition, employers had to indicate how many university students who had not completed any WIL were appointed by them to determine whether there are any differences in the number of WIL and non-WIL students employed. The results are presented in figure 1 below.

Figure 1. Number of WIL students accommodated and employed.

	Total nr of WIL students from all universities	Average nr of CUT WIL students	Nr of CUT students offered employment upon completion of WIL	Nr of CUT students (exluding WIL students) offered employment
Median	20	4	2	1
Lower Quartile	8	2	1	0
Upper Quartile	64	10	4	2
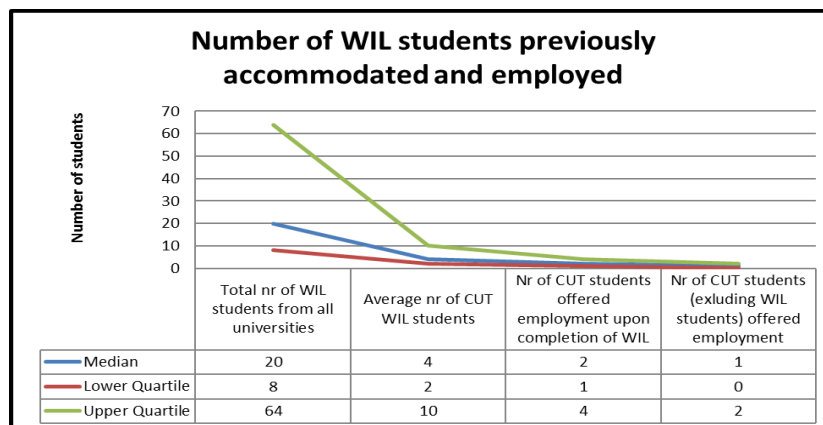
A significant statistic from figure 1 is that on average two (2) CUT students were offered employment upon completion of WIL compared to the one (1) student employed who did not complete any WIL. This evidence clearly indicates how WIL has enhanced the employability of students and that employers prefer to appoint students who have completed their WIL with them.

Based on this evidence, employers were asked to list the specific aspects about WIL that enhances the employability of students. The responses received are listed in the following order of importance: Knowledge of the work environment and expectations (31.91%); Job experience (23.4%); Better prepared and equipped for the working world (17.02%); Time to assess and mould a person as a future employee (9.57%) and the practical application of knowledge (7.45%). The conclusion is therefore made that knowledge of the work environment and expectations gained through the unique job experience that WIL provides for the practical application of knowledge, provides employers with time to assess and mould a person as a future employee that enable students to be better prepared and equipped for the working world. This can then be regarded as the specific ingredient about WIL that enhances employability.

Employers were also asked to indicate the skills and qualities that students should have when graduating from university to be appointed as an employee within their organisation. The top five (5) skills and qualities identified were: Attitude (23.97%), Subject matter expertise (14.6%), People skills (9.8%), Communication (9.15%) and professional behaviour (8.5%).

6. Conclusion

The recommendations of employers on a strategy to follow on how to use and structure WIL to optimally enhance the employability of students is presented in the template (diagram 1) below in addition to the objectives analysed above and aligned with the adopted definition of strategy for this investigation.

Diagram 1. Strategy template to optimally enhance the employability of students through WIL.

An understanding of where one is = Basis	
SWOT analysis	Reasons why employers want WIL students

A clear sense of where one wants to end up = Objective
Optimize the employability of students through WIL

Determine what stands in between = Assess	
What specifically about WIL enhances employability	Bucket of skills and qualities required

Decide how to approach the challenge = Enablers	
The structure of the WIL component in qualifications	Services required by employers

A course of action = Details
Preparation of students and employers, Placement, Monitoring, Mentoring, Assessment, Debriefing

References

Arauz, M. (2014). What is strategy? Retrieved on 7 April 2015 from https://medium.com/on-management/what-is-strategy-79d9a039f5dc.

Bologna Process. (2010). Employability. () Retrieved on 2 February 2014 from http://www.ond.vlaanderen.be/hogeronderwijs/bologna/actionlines/employability.htm .

Cambridge Dictionaries Online. 2014. Employability. Retrieved on 2 February 2014 from http://dictionary.cambridge.org/dictionary/business-english/employability.

Croasmun, J.T. & Ostrom, L. (2011). Using Likert-Type scales in the social sciences. *Journal of Adult Education, 40* (1):19-22.

Helyer, R. (2007). What is employability? Reflecting on the postmodern challenges of work-based learning. *Journal of Employability and The Humanities, Summer* (1):1-12.

My Market Research Methods. (2011). Descriptive vs. inferential statistics: What's the difference? Retrieved on 10 January 2013 from http://www.mymarketresearchmethods.com/descriptive-inferential-statistics-difference/

Stoker, D.J. (1981). *Sampling in practice*. Pretoria: University of Pretoria.

Williams, C. (2010). Understanding the essential elements of work-based learning and its relevance to everyday clinical practice. Retrieved on 4 July 2014 from http://www.ncbi.nlm.nih.gov/pubmed/20840356.

PERCEIVED ACCEPTANCE OF FAMILY ON BINGE DRINKING AND CANNABIS CONSUMPTION AMONG SPANISH UNIVERSITY STUDENTS

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Abstract

The use of legal and illegal drugs has increased substantially in the university population. Binge drinking (BD) is a common pattern of alcohol consumption in Spanish university students. Cannabis is the most widely consumed illegal drug among those BD students who also take illegal drugs. Recent research has shown that received social support from family acts as a protective factor for illicit drug use in the university population. However, few studies have analysed the link between perceived social support from family and drug use in university students. In this study, we compared groups of university students in relation to alcohol/drug consumption and perceived sense of acceptance from family, a key component of perceived social support. Data were obtained from 484 first-year university students (268 females and 216 males). Participants were classified in three groups, controls, binge drinkers and binge drinkers who used cannabis (BD-CA) on the basis of the scores obtained in the Alcohol Use Disorders Identification Test (AUDIT) and responses to questions on alcohol and cannabis use. Perceived sense of acceptance was measured using the Perceived Acceptance Scale (PAS). Analysis of the data revealed a higher level of perceived sense of acceptance from family in the controls and BD than in the BD-CA users. Differences between females and males were only observed in the BD-CA user groups, in which females showed lower perceived sense of acceptance from family than males. Future research should widen the research to include other aspects of socialization, especially in peer groups.

Keywords: Binge drinking, cannabis consumption, gender, first-year university students, perceived sense of acceptance.

1. Introduction

The use of legal and illegal drugs has increased substantially in the university population (World Health Organization, 2014). Binge drinking (BD), a pattern characterized by the intermittent consumption of large amounts of alcohol, usually at weekends (National Institute on Alcohol Abuse and Alcoholism, 2016), is highly prevalent in Spanish university students, with peak consumption occurring between 20 and 24 years, 35.5% for males and 24.7% for women (EDADES, 2015/2016). Cannabis is the most widely consumed illegal drug among those BD students who also take illegal drugs (e.g. Martínez, Roth, Johnson, & Jones, 2015). High rates of BD and BD-cannabis consumption in the university population is a serious public health problem with significant negative consequences in both the short and long term.

Prior research has found that the transition to university marks a period of increased vulnerability for encourage risky consumptions (e.g. Caamaño-Isorna et al., 2011). While first-year university students are still contending with developmental tasks as establishing autonomy and personal identity, access to higher education faces them with numerous challenges such as adapting to a new and highly competitive environment, manage the separation from their family and friends, the creation of new friendships and relationships with new peer groups, as well other important changes (Fierro, & Moreno, 2007). But as not all students seem prepared to meet these challenges and may consider this transition as a time of emptiness or waiting in which taking risks is an escape route to face this period of uncertainty (Pascarella, & Terenzini, 2005). Recent research has shown that received social support from family acts as a protective factor for legal and illegal drugs use in the university population (e.g. Abar, & Turrisi, 2008), but surprisingly little attention has been paid to the possible beneficial effects of perceived social support of family. There is evidence to suggest que students´perceived social support to be even more important than their actual received support against the development of substance use problem by reducing the likelihood of psychological distress by enhancing self-esteem and a sense of control over the environment (Averna, & Hesselbrock, 2001; Mericle, 2014). The protective effect of perceived social support derives

from the individual's conviction that others care about us and value us independently of our attitudes and actions (Brock, Sarason, Sanghvi, & Gurung, 1998).

2. Objectives

The objective of this study is to explore differences in perceived sense of acceptance from family, a key component of perceived social support, among a sample of Spanish first year university students BD, BD-cannabis and control group, taking gender into consideration.

3. Methods

The study participants were 484 first-year students, enrolled for the first time in undergraduate degree courses at the University of Santiago de Compostela. Informed consent was obtained from all subjects, who were paid for their voluntary participation in the study. The sample included 268 females and 216 males, with an average age of 18.25 years (SD=.43). Most of the students were single and were not employed. 14.9% of students were living in the family home and 85.1% of students were living away from home. The study was undertaken in compliance with Spanish legislation and the Code of Ethical principles for Medical Research Involving Humans Subjects outlined in the Declaration of Helsinki.

Binge drinking (BD) was measured with the *Alcohol Use Disorders Identification Test* (AUDIT, Saunders et al., 1993; Varela et al., 2005), and responses to questions on alcohol and cannabis use. Perceived sense of acceptance was measured using the *Perceived Acceptance Scale* (PAS, Brock, Sarason, Sanghvi, & Gurung, 1998; Rodríguez, Martínez, Tinajero, Guisande, & Páramo, 2012).

4. Results

A two-way analysis of variance was conducted to determine the influence of consumption group and gender on perceived sense of acceptance from family. The consumption group consisted of three levels (control, BD, BD-cannabis) and gender included two levels (females, males). Male students who consumed 6 or more standard drinks and female students who consumed 4 or more standard drinks on a single occasion, at least once in the last 30 days, were classified as binge drinkers (188 students). The BD-cannabis group consisted of students who also consumed at least 3 cannabis units in the last 3 months (119 students).

Differences between groups were observed ($F_{(2,483)}=5.146$, p=.006, $\eta^2=.021$). The perceived sense of acceptance from family was higher in the control and BD students than in the BD-cannabis group. The interaction between gender and group was significant ($F_{(2,483)}=3.339$, p=.036, $\eta^2=.014$), although differences between females and males were only observed in the BD-cannabis group ($t_{(117)}=-2.524$, p=.013). Cannabis use was associated with lower perceived social support from family in the females than in the male students.

Figure 1. Perceived acceptance from family by consumption group.
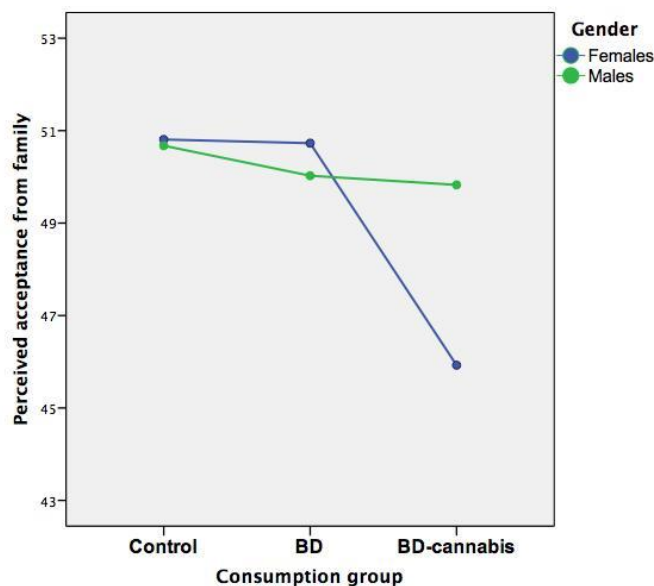
5. Discussion and conclusions

This is the first study to examine the perceived sense of acceptance from family in Spanish first-year university students with a BD pattern of alcohol consumption and polysubstance use (BD-cannabis) in comparison with the control group. As expected, our findings reveal that the control group showed significantly greater perceived sense of acceptance from family in comparison with the BD-cannabis group. The results of the present study are consistent with prior studies that have established a link between polysubstance users and lower perceived social support among university students (Mericle, 2014). In addition, this investigation provides empirical evidence that during the transition to university, the perception of support from the family is not abandoned in favour of other relationships outside the family context. Another interesting finding is that gender differences only appear in the BD-cannabis group, with women showing less perceived acceptance of the family than men. Differences between men and women with regard to perceived sense of acceptance from family and risk consumption have been occasionally registered. A plausible explanation is that the use of drugs does not mean the same thing to men and women (Murphy, McDevitt-Murphy, & Barnett, 2005); while among men, drug use is perceived as a natural, socially and culturally accepted behavior, the women with drug addictions endure a greater degree of social reproach or rejection, which translates into a greater perception of rejection of your family.

References

Abar, C., & Turrisi, R. (2008). How important are parents during the college years? A longitudinal perspective of indirect influences parents yield on their college teens' alcohol use. *Addictive Behaviors*, *33*(10), 1360-1368.

Averna, S., & Hesselbrock, V. (2001). The relationship of perceived social support to substance use in offspring of alcoholics. *Addictive Behaviors*, *26*(3), 363-374.

Brock, D. M., Sarason, I. G., Sanghvi, H., & Gurung, R. A. (1998). The perceived acceptance scale: Development and validation. *Journal of Social and Personal Relationships*, *15*(1), 5–21.

Caamaño-Isorna, F., Mota, N., Crego, A., Corral, M., Rodríguez, S., & Cadaveira, F. (2011). Consumption of medicines, alcohol, tobacco and cannabis among university students: a 2-year follow-up. *International Journal of Public Health*, *56*(3), 247-52.

EDADES, 2015/2016. [Survey on alcohol and drugs in Spain]. Ministerio de Sanidad, Servicios sociales e Igualdad.

Fierro, D., & Moreno, A. (2007). Emerging adulthood in Mexican and Spanish youth: Theories and realities. *Journal of Adolescent Research*, *22*(5), 476–503.

Martínez, J.A., Roth, M.G., Johnson, D.N., & Jones (2015). How robustly does cannabis use associate to college grades? Findings from two cohorts. *Journal of Drug Education, 45*(1), 56-67.

Mericle, A.A. (2014). The role of social networks in recovery from alcohol and drug abuse. *The American Journal of Drug and Alcohol Abuse*, *40*(3), 179-180.

Murphy J.G., McDevitt-Murphy M.E., Barnett, N. (2005). Drink and be merry? Gender, life satisfaction, and alcohol consumption among college students. *Psychology of Addictive Behaviors*, *19*(2), 184–191.

National Institute on Alcohol Abuse and Alcoholism (2016). *Rethinking Drinking: Alcohol and Your Health*. Department of Health and Human Services, NIH.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (Vol. 2). Hoboken, NJ: Jossey-Bass.

Rodríguez, M. S., Martínez, Z., Tinajero, C., Guisande, M. A., & Páramo, M. F. (2012). [Spanish adaptation of the Perceived Acceptance Scale (PAS) in university students]. *Psicothema*, *24*(3), 483–486.

Saunders, J.B., Aasland, O.G., Babor, T.F., de la Fuente, J.R., & Grant M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. *Addiction*, *88*(6), 791–804.

Varela, J., Braña, T., Real, E., & Rial, A. (2005). [Validation of AUDIT for Galician population]. Santiago de Compostela, Spain: Consellería de Sanidade-Sergas (Xunta de Galicia).

World Health Organization (2014). *Global Status Report on Alcohol and Health*. Geneve: WHO.

IS THE PEN STILL MIGHTIER THAN THE KEYBOARD FOR WRITING? A COMPARATIVE STUDY IN ELEMENTARY SCHOOL

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Abstract

Learning to write presents a significant challenge for elementary school pupils, as it represents a complex activity involving cognitive aspects, such as writing processes and strategies. ICTs may provide new avenues to help pupils in this regard. Indeed, it has been observed that computers are increasingly used for classroom writing activities, both to improve writing skills and motivate pupils to write. Yet very few studies have compared the effects of using a keyboard versus pencil and paper at the elementary school level. Moreover, existing studies use different indicators of performance, inevitably leading to different conclusions. This study aimed to compare the effects of two writing modes, keyboard versus pencil and paper, on the writing performance of children in elementary school.

Pupils in Grades 2, 4 and 6 (N=255) were assigned two different writing tasks, each under two different conditions: using a keyboard and using a pencil and paper. Their writing performance was evaluated for each condition. Results (t tests) show that pupils wrote faster and produced better quality texts when using a pencil and paper. When pupils were allowed to use a spell check program, only the lexical spelling scores of those in Grades 4 and 6 were higher when they used a keyboard versus pencil and paper.

Keywords: Keyboard, handwriting, writing performance, elementary school.

1. Introduction

The poor writing skills of pupils in Quebec have been noted and discussed for many years. This problem is revealed in the results of ministerial exams, with failure rates standing at 20.6% (MELS, 2012). In the search for solutions, the use of information and communication technologies (ICTs) to help pupils improve their writing skills appears to be a promising avenue. Yet, there is a lack of consensus regarding the pedagogical benefits of using these tools. Some studies have brought out the positive effects of using a computer on the quality of written texts (Purcell et al., 2013) or spelling (Grégoire, 2012), while others have shown better results with the use of a pencil and paper: pupils write faster and write longer texts (Berninger et al., 2009; Connelly et al., 2007; Wollscheid et al., 2016). These studies have used different indicators of performance, inevitably leading to different conclusions. Other studies, meanwhile, have supported the practice of handwriting, showing the importance of motor activity, for example, in learning to spell (Vinter & Chartrel, 2010; Longcamp et al., 2005). It thus appears relevant to draw up a developmental portrait of the current situation in elementary schools and compare the writing performance of the same pupils using a pencil and paper versus a keyboard.

2. Method

2.1. Participants

This study involved pupils in Grades 2 (aged 7-8), 4 (aged 9-10) and 6 (aged 11-12) (N=225). To ensure that the classrooms under study were equivalent with regard to the use of ICTs, the teachers were contacted by phone and asked how much time their pupils spent engaged in writing activities at the computer. The teachers reported that their pupils used the computer for writing activities one to two hours a week.

2.2. Procedure

The pupils were met on two occasions. No training in writing with a keyboard was given to the pupils. Each session involved two individual writing activities. The first was a word writing activity. An experimenter presented a set of pictures corresponding to the words to be written down, while saying the words out loud. The pupils were then given a sheet containing the same pictures and asked to write down as many words as they could within a 3-minute time limit. No writing aids were made available (the spell

check program on the computer was deactivated). The second activity consisted in writing a narrative text (duration: 20 minutes). The pupils were asked to write a story describing a "Trip to an Imaginary Country" or a day with a "Magical Power" (one theme per session). They had access to all the usual writing aids.

2.3. Measures

Word Writing Activity

A lexical spelling score was calculated based on the percentage of correctly spelled words out of the total number of words produced. Handwriting fluency was measured through a writing speed score based on the number of words written down within the three-minute time limit.

Narrative Text Writing Activity

A lexical spelling score was calculated by working out the percentage of correctly spelled words. The length of the text was measured by counting up the number of words produced. For the overall quality of the text two points were allotted for the sufficiency of ideas, two points for adaptation to the writing situation and two points for textual coherence, for a maximum score of 6 points.

2.4. Data analysis

To ensure objectivity in the analysis and consistency in the marking, all the words and texts produced by the pupils were marked by two correctors. Means and standard deviations were calculated for each performance indicator. Student's t-tests were then conducted to determine which writing mode allowed the pupils to perform best.

3. Results

Overall, the results showed that in Grades 2, 4, and 6 (Table 1), the pupils wrote faster and made fewer spelling errors in the word writing activity and produced better quality narrative texts when using a pencil and paper.

Moreover, the pupils in Grades 2 and 4 produced longer texts when using a pencil and paper, whereas, in Grade 6, their texts were of similar length in both writing modes.

Lastly, the only area in which using a keyboard helped improve the performance of pupils in Grades 4 and 6 was lexical spelling, in the narrative text writing activity (using the spell check program), while pupils in Grade 2 performed equally well on this indicator when using a keyboard or pencil and paper.

Table 1. Mean scores (and standard deviations) on performance indicators in paper and pencil and keyboard conditions.

	Grade 2 (N= 63)			
	Performance indicators	**Mean: paper/pencil (SD)**	**Mean: keyboard (SD)**	**t**
Words	Writing speed	94.32 (39.11)	47.94 (20.80)	12.359*
	Lexical spelling	43.87 (26.22)	33.57 (23.96)	3.934*
Text	Lexical spelling	74.81 (12.73)	77.14 (11.56)	-1.334
	Overall quality	3.77 (1,60)	2.52 (2.20)	4.849*
	Length	69.61 (36.13)	42.20 (27.50)	7.776*

	Grade 4 (N= 81)			
	Performance indicators	**Mean: paper/pencil (SD)**	**Mean: keyboard (SD)**	**t**
Words	Writing speed	176.19 (47.77)	122.65 (44.06)	12.994*
	Lexical spelling	65.51 (19.95)	56.88 (23.65)	4.904*
Text	Lexical spelling	89.14 (7.02)	91.40 (6.78)	-3.445*
	Overall quality	4.11 (1.41)	3.60 (1.72)	3.347*
	Length	145.39 (58.09)	124.89 (57.74)	3.266*

	Grade 6 (N= 81)			
	Performance indicators	**Mean: paper/pencil (SD)**	**Mean: keyboard (SD)**	**t**
Words	Writing speed	221.64 (45.83)	174.34 (38.84)	10.124*
	Lexical spelling	62.40 (16.50)	59.09 (17.82)	2.858*
Text	Lexical spelling	93.75 (4.05)	94.76 (3.74)	-2.312*
	Overall quality	4.57 (1.13)	4.09 (1.19)	2.927*
	Length	180.43 (59.87)	182.34 (68.47)	-.257

4. Discussion

First, with regard to the word writing task, the results showed that the pupils in all grade levels wrote more slowly when using a keyboard, in line with the results of studies by Connelly et al. (2007) and Berninger et al. (2009). Writing with a keyboard appears to be less automatic for pupils than writing by hand, which is not surprising given that most classroom activities still involve a pencil and paper. Using a keyboard to write likely leads to cognitive overload, thus limiting pupils' performance, as suggested both by our results (lower scores on lexical spelling) and by other researchers' (Connelly et al., 2007; Johansson et al., 2010).

Second, in Grades 4 and 6, pupils began to show better scores in lexical spelling when using a keyboard in the narrative text writing activity. Some progress thus appears to have been made in the pupils' ability to write with a keyboard. Pupils' experiences in and outside the classroom likely help them master their use of some functions of the word processing software (spell check), enabling them to make better use of this tool. However, in the context of our study (only one to two hours a week spent writing at a computer), the pupils in all grade levels still did not have a strong enough mastery of the keyboard to allow them to perform better overall on the computer than when using a pencil and paper. In order to achieve better results, the writer's technical skills must not interfere with his or her writing (Grégoire, 2012). It thus appears essential to teach pupils how to use a keyboard and give them the opportunity to practice writing with this tool on a regular basis.

5. Conclusion

This study provides a realistic and up-to-date portrait of the effects of using a keyboard on the writing performance of pupils in Grades 2, 4 and 6 in Quebec, in a context where computers are used only as a complement to handwriting. Based on this study, some recommendations can be made to teachers. First, since the pupils' writing performance was better overall when using a pencil and paper, writing by hand appears to be the mode that best allows pupils to show their level of competence. It is thus not appropriate, at the present time, to use a keyboard to evaluate pupils' writing skills. Keyboards appear to be better used for learning purposes than testing purposes. Furthermore, it appears that direct and explicit training in the use of this tool and its functions as well as more practice time using appear essential to help pupils develop the needed technical skills and, more broadly, master the entire writing process in a digital context.

References

Berninger, V. W., Abbott, R. D., Augsburger, A. & Garcia, N. (2009). Comparison of Pen and Keyboard Transcription Modes in Children with and without Learning Disabilities. *Learning Disability Quarterly, 32*(3), 123-141.

Connelly, V., Gee, D. & Walsh, E. (2007). A comparison of keyboarded and handwritten compositions and the relationship with transcription speed. *British Journal of Educational Psychology*, *77*, 479–492.

Grégoire, P. (2012). L'impact de l'utilisation du traitement de texte sur la qualité de l'écriture d'élèves québécois du secondaire. Thèse, Université de Montréal.

Longcamp, M., Zerbato-Poudou, M. & Velay, J. (2005). The influence of writing practice on letter recognition in preschool children: A comparison between handwriting and typing. *Acta Psychologica, 119*(1), 67-79.

Ministère de l'éducation, du Loisir et du sport (2012). Évaluation du plan d'action pour l'amélioration du français : Suivi des apprentissages réalisés par les élèves en écriture (2009, 2010) – Deuxième rapport d'étape, Québec.

Purcell, K., Buchanan, J. & Friedrich, L. (2013). *The Impact of Digital Tools on Student Writing and How Writing is Taught in Schools.* Washington: Pew Research Center's Internet & American Life Project.

Vinter, A. et Chartrel, E. (2010). Effects of different types of learning on handwriting movements in young children, *Learning and Instruction, 20(6)*, 476-486.

Wollscheid, S., Sjaastad, J. & Tomte, C. (2016). The impact of digital devices vs pencil and paper on primary school students' writing skills: A research review. *Computer & Education*, *95*, 19-30.

BINGE DRINKING, CANNABIS CONSUMPTION AND ADAPTATION TO UNIVERSITY IN SPANISH STUDENTS

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Abstract

Adjustment to university is a complex multifaceted construct of academic, social, personal-emotional and institutional demands that require a variety of coping strategies involving many factors other than academic performance. Some students find it difficult to adapt to university and may resort to drug abuse as a compensatory mechanism for coping with the associated stress. This is an important topic because poor adjustment in the population at risk may lead to a rise in university attrition rates. The main purpose of this study was to analyze adjustment in first-year university students in relation to binge drinking (BD) and cannabis use. A sample of first-year university students (182 male and 227 female) was assessed using the Student Adaptation to College Questionnaire (SACQ). Patterns of drinking and cannabis consumption included three levels, control, binge drinkers and binge drinkers who used cannabis (BD-CA). Analysis of the data revealed an association between patterns of drug/alcohol use and academic adaptation to university. The BD-CA students showed greater difficulties in terms of academic adaptation than the controls, and the response was similar in females and males. Future studies should examine more closely whether poorer academic adaptation to university in students who consume both alcohol and cannabis affects their academic performance and/or their decision to drop out of university.

Keywords: Binge drinking, cannabis consumption, first-year university students, SACQ.

PROBLEM-BASED LEARNING AS A MOTIVATING STRATEGY FOR STUDYING METABOLISM

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Abstract

Metabolism, its regulation and its integration is one of the most complex study subjects for Biochemistry students. In fact, its learning is perceived as a demanding and difficult task by undergraduate science students, and only few of them achieve an integrated and deep learning of the subject. Problem-based learning (PBL) can be used as a motivating didactic strategy. It is still a relatively innovative tool in Spanish universities to be applied for the study of fundamental topics in biochemistry.

We are currently involved in an Educative Innovation Project (PIE17-145, funded by University of Malaga) aimed to improve the teaching practice of Metabolism to undergraduate students. Within the framework of this Project, PBL has an important role in broadening a more active role of the students, making them more responsible for their own-learning and promoting a more positive and interested attitude to Science.

Following a *design-based research* methodology we are currently developing new metabolism cases of PBL applied to different groups of biochemistry and biology undergraduate students. First perceptions of the PBL application indicate that students find this educational strategy demanding and challenging, but also very helpful to improve their skills and aptitude in the learning of the fascinating but complex metabolic integration.

Keywords: *Problem-based learning, design-based research, metabolism, biochemistry, higher education, science education.*

1. Introduction

Metabolism is a dynamic network with high levels of plasticity that is able to rewire, allowing for its adaptation to environmental and internal changes. The complexity of this dynamical metabolic network, its multiple levels of regulation and its integration make metabolism one of the most difficult and complex study subject for students of Biochemistry (Vella, 1990; Vullo, 2014).

At the University of Málaga (Spain), metabolism is a topic cover by mandatory courses in the Degrees in Biology (*Bioquímica II*, devoted to the study of *Metabolic Biochemistry*), Biochemistry (*Regulation of Metabolism*) and Chemistry (a course entitled *Biochemistry* that is fully devoted to the study of metabolism).We are currently developing an Educative Innovation Project (PIE17-145, funded by the University of Málaga) aiming to improve the experience of the teaching-learning process by using a design-based research methodology (Collins et al, 2004) and a problem-based learning approach (PBL) (Barrows, 1986; Gallagher et al, 1995; Dolmans et al, 2016).

2. Objective

The main declared goal of the innovative teaching project PIE17-145 is to contribute to increase both the percentages of students attending and passing exams in the *Metabolic Regulation* and *Regulation of Metabolism* courses. Another important target of this project is to change certain attitudes of students, decreasing their competitiveness and increasing their cooperativity by stimulating their engagement with

procedures of co-operative study in a class less hierarchical and more horizontal, with the professor in the role of a facilitator/guide in a flipped classroom.

3. Design

During the first semester of the first academic year of application of the project PIE17-145, the professors involved in teaching of the *Metabolic Regulation* and the *Regulation of Metabolism* courses designed a long case covering systematically the main contents related with glycogen structure, metabolism and regulation. The case is composed of 57 guided tasks organized around five topics: 1) On the structure and properties of glycogen (13 tasks). 2) Historical issues regarding the scientific study of glycogen metabolism and its regulation (5 tasks). 3) On glycogen metabolism and its regulation (24 tasks). 4) Glycogenosis. Biochemical foundations of clinical cases (10 tasks). And 5) Integration of glycogen metabolism (5 tasks). The guided tasks are designed as to stimulate the interaction among the members of the different teams/groups of students, their cooperative behavior during learning and their critical thinking. Furthermore, some tasks are designed to encourage the reading of scientific papers and the use of biological databases and online resources of great utility.

According to the *design-based research methodology*, the pilot study has been implemented along this academic course 2017-18. *Metabolic Regulation* and the *Regulation of Metabolism* courses are offered in the second semester of the second academic year of undergraduate students in Biology and Biochemistry, respectively. During the second semester of the first academic year of application of the project PIE17-145, we have enrolled volunteer students of these two courses to a system of continuous evaluation under a learning contract in which co-operative learning is boosted using the PBL approach. In *Metabolic Regulation*, 20 volunteer students who signed the learning contract were splitted in 5 groups. In *Regulation of Metabolism*, 32 students signed the learning contract and were splitted in 8 groups. All the groups received the instructions and rules to solve the "case" and a written document with all this information, along with the 57 tasks of the case. Each group freely decided how to organize the work and how to share the tasks. Groups had two months to prepare a final report with the description of the response provided to each task and a public declaration of engagement, with mention of the specific work carried out by each member of the group in the resolution of the overall case. Throughout the whole procedure groups were allowed to demand tutorial sessions and guidance from their professors.

To monitor the learning process, before glycogen case presentation to the students and after the submission of their final reports, they answered anonymously the questions of a test to analyze the impact of the PBL work on their acquisition of knowledge regarding glycogen, its metabolism, regulation and integration.

Students' perception of this PBL methodology will be evaluated by means of a post course mixed questionnaire, elaborated by using the 1 to 4 Likert scale for most of the questions, complemented with some other open answered ones.

At the moment of redaction of this chapter, groups had already submitted their reports and the professor had begun the evaluation process.

Data obtained from the three above mentioned sources: pre and post-test assessment, student's perception survey and evaluation will help to perform a deep retrospective analysis in order to reformulate the PBL case. The "new" version for this case is programmed to be implemented in the main study to be carried out along the next course 2018-19.

4. Future directions

It is expected that the use of the PBL approach within the framework of a collaborative learning in a flipped classroom will contribute to improve the experience of our students learning metabolism and its regulation. As it occurred with its predecessor educative innovation project PIE15-163, it is expected that the learning contract used in the project PIE17-145 will contribute to increase our student loyalty to the subject (and hence to increase their attendance to exams), as well as to increase the percentage of students passing the exams.

For the second year of application of the project PIE17-145, we have programmed the design of new complex cases, as well as some other simpler ones to be used in the "training" of our students in the implementation of the PBL approach. The case on glycogen and the new cases to be designed in the next few months will be offered not only to students enrolled in the the *Metabolic Regulation* and the *Regulation of Metabolism* courses, but also to students of the Degree in Chemistry enrolled in the *Biochemistry* course and to students of the Degree in Biochemistry enrolled in the optional course on *Molecular Biology of Cancer*.

The innovative teaching projects PIE15-163 and PIE17-145 have already yielded some scientific production (García-Ponce et al., 2017a, 2017b, Medina et al, 2017). A detailed description of the project PIE15-163 and its results, along with a number of conceptual and empirical chapters are contained in the book (in Spanish) *The Teaching of Metabolism: Challenges and Opportunities* (Medina et al, 2017), available in https://hdl.handle.net/10630/15124

References

Barrows, H. S. (1986). A taxonomy of problem-based learning methods. *Med. Educ. 20 (6),* 481- 486.

Collins, A., Joseph, D. & Bielaczyc, K. (2004). Design research: Theoretical and methodological issues. *J. Learning Sci., 13 (1),* 15-42.

Dolmans, D.H.J.M., Loyens S.M.M., Marcq, H. & Gijbels, D. (2016). Deep and surface learning in problem-based learning: a review of the literature. *Adv. Health Sci. Educ., 21 (5),* 1087–1112.

Gallagher, S., Stepien, W., Sher, B. & Workman, D. (1995). Implementing problem-based learning in science classrooms. *School Sci. Math., 95 (3),* 136-146.

García-Ponce, A. L., Blanco-López, A., Quesada, A. R., Alonso Carrión, F. J., Suárez, M. F. & Medina, M. A. (2017). Use of learning contract and problem.based learning in a metabolic biochemistry course for undergraduates in Biology. In pixel (Ed.), *New perspectives in Science Education (6th edition) Conference Proceedings* (249-253). Padova: Libreriauniversitaria.it.

García-Ponce, A. L., Blanco-López, A., Quesada, A. R., Martínez-Poveda, B. & Medina, M. A. (2017). Is problem-based learning a motivating didactic strategy for undergraduate science students to study metabolism? In *FEBS3+ Book of Abstracts* (83-84). Barcelona: Rubes Editorial.

Medina, M. A., Suárez, M. F. & Alonso Carrión, F. J. (2017). *La Enseñanza del Metabolismo: Retos y Oportunidades*. [In Spanish]. Available in https://hdl.handle.net/10630/15124

Vella, F. (1990). Difficulties in learning and teaching of Biochemistry. *Biochem. Educ., 18 (1),* 6-8.

Vullo, D.L. (2014). El desafío de enseñar y aprender metabolismo en cursos de grado. *Revista QuímicaViva, 13 (1), 18-30.* [In Spanish].

THE DIFFERENCES OF THE FAMILY STRENGTH ACCORDING TO CLUSTER TYPES BASED ON THE FAMILY RITUAL OF FAMILIES WITH CHILDREN IN EARLY CHILDHOOD

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Abstract

This study examined the differences of family strength according to cluster types based on the family ritual (occurrence, roles, routine, attendance, affect, symbolic significance, continuation, deliberateness) of families with children in early childhood as the crisis of family community in Korea society deepens. For the purpose, a survey was conducted targeting 255 families with children in early childhood in Korea. The analysis methods of descriptive statistics were one-way ANOVA, hierarchical cluster analysis, K-means cluster analysis. The results showed that 1) the cluster analysis on family ritual revealed five clusters: 'Rich and flexible sufficient use group', 'Sufficient use group to pursue meaning', 'Role sharing complementary need group', 'Rigid complementary need group', 'Inconsistent unused group'. 2) There were significant differences of family strength factor (bond, communication, problem-solving ability and share value system between family members) according to cluster types based on the family ritual. This study provided implications for the practice of family ritual and a parent education program for empowering family strength.

Keywords: *Family with children in early childhood, family ritual, family strength, cluster analysis.*

1. Introduction

The purpose of this study was to examine the difference of family strength according to the type of cluster analysis about the family rituals of families with children in early childhood as the crisis of the social family community is deepening.

2. Methods

The sample of the research consisted of 255 families with children in early childhood selected according to random sampling method in Southeast area, South Korea. Backgrounds of the sample of mothers participated in this study were showed table 1.

Variables were measured in this survey were self-reported social competence in family rituals scale and family strength scale. The family ritual scale (Fiese & Kline, 1993) is self-evaluation of their repeated and collaborative activities in daily life that give a special meaning to the family, such as family cohesion, intimacy, affection (64 items). This scale is a 5 point Likert scale, which means that the higher the score, the higher the awareness of the type of family ritual. The family strength scales consisted of 4 sub-variables (22 items): family bond, communication among family members, family ability to solve problems, and sharing value system among family members (Eo & Yoo, 1995). This scale is a 5 point Likert scale, the higher the score of family strength, the higher the level of family strength perceived by parents. Using the collected data, descriptive analysis, one-way ANOVA, hierarchical cluster analysis, K-means cluster analysis were used.

Table 1. Backgrounds of the sample of families participated in this study.

Variable		*n*	*%*	Variable		*n*	*%*
Father Age	30s	158	62.0	Mother Age	20s	6	2.4
	Above 40s	94	36.8		30s	192	75.3
	nonresponse	3	1.2		Above 40s	54	21.2
					nonresponse	3	1.2
Father Levels of education	Below high school	36	14.1	Mother Levels of education	Below high school	29	11.4
	college	42	16.5		college	60	23.5
	university	126	49.4		university	123	48.2
	graduate school	49	19.2		graduate school	42	16.5
	nonresponse	2	0.8		nonresponse	1	0.4
Marriage period	below 5 years	16	6.2	Number of children	1	55	21.6
	5-9 years	164	63.8		2	172	67.5
	10-14 years	68	26.5		Above 3	27	10.6
	Above 15 years	8	3.1				
	nonresponse	1	0.4		nonresponse	1	0.4

3. Results

3.1. The cluster type of family rituals

As shown in Table 2 below, cluster types of family rituals showed that the cluster analysis on family ritual revealed five clusters: 'Rich and flexible sufficient use group', 'Sufficient use group to pursue meaning', 'Role sharing complementary need group', 'Rigid complementary need group', 'Inconsistent unused group'.

Table 2. Mean and standard deviation of total and sub-factors according to clusters type of family rituals (N=254).

family ritual	cluster1 Rich and flexible sufficient use group	cluster2 Sufficient use group to pursue meaning	cluster3 Role sharing complementary need group	cluster4 Rigid complementary need group	cluster5 Inconsistent unused group
	M(SD)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
Regularity	4.03(.54)	4.37(.26)	4.03(.32)	3.80(.30)	3.35(.40)
Role performance	3.53(.68)	3.90(.46)	2.89(.49)	3.42(.55)	3.34(.52)
flexibility	3.57(.64)	3.54(.43)	3.63(.36)	2.96(.45)	3.03(.33)
Expectation of participation	4.00(.63)	4.22(.38)	4.15(.34)	3.36(.53)	3.36(.46)
Emotional contribution	4.14(.57)	4.67(.24)	3.92(.26)	4.27(.38)	3.41(.42)
Symbolism	4.01(.60)	4.62(.27)	3.84(.30)	4.19(.33)	3.29(.38)
Persistence	3.95(.59)	4.38(.27)	3.90(.31)	3.78(.26)	3.18(.43)
Planning	3.99(.67)	4.22(.57)	4.07(.34)	3.56(.54)	3.22(.40)
Total	4.54(.21)	4.24(.13)	3.86(.16)	3.67(.16)	3.21(.20)

3.2. Difference of family strength according to family ritual

As shown in table 3, there were significant differences of family strength factor such as family bond ($F=26.30$, $p<.001$), family communication ($F=23.14$, $p<.001$), family problem-solving ability

(F=18.35, p<.001), and share value system between family members (F=24.51, p<.001) according to cluster types based on the family ritual.

Table 3. difference of family strength according to family ritual.

family strength sub-factor	cluster type	n	M(SD)	F	post-hoc (Scheffe)
family bond	cluster1(a)	52	4.83(.25)	26.30***	e<d** d<a**
	cluster2(b)	45	4.69(.34)		
	cluster3(c)	69	4.34(.50)		
	cluster4(d)	33	4.39(.44)		
	cluster5(e)	54	4.02(.59)		
family communication	cluster1(a)	53	4.69(.41)	23.14***	c<b** e<b***
	cluster2(b)	45	4.50(.44)		
	cluster3(c)	69	4.08(.52)		
	cluster4(d)	33	4.22(.47)		
	cluster5(e)	54	3.85(.61)		
ability to solve problems	cluster1(a)	53	4.56(.46)	18.35***	b<a*** c, e<b**
	cluster2(b)	45	4.35(.47)		
	cluster3(c)	69	4.14(.47)		
	cluster4(d)	33	4.05(.54)		
	cluster5(e)	54	3.79(.55)		
sharing value system	cluster1(a)	53	4.83(.25)	24.51***	e<a, b*** e<c, d**
	cluster2(b)	45	4.31(.42)		
	cluster3(c)	69	3.91(.55)		
	cluster4(d)	33	3.85(.53)		
	cluster5(e)	54	3.49(.62)		

$^{**}p < .01$, $^{***}p < .001$

4. Conclusions

Findings suggested parent education to support family ritual could help make their family strength enhancing. Based on these results. The characteristics of the type of family ritual were identified as a factor of enhancing the health and restoration of the family with *with children in early childhood* who may have a negative influence on the family health due to the stress on the parental period. Family rituals not only convey family values and norms, but also act as preventive mechanisms to cope with the problems and crises faced by family members and protect them from the risk of family members' stress and emotional anxiety. It is based on the ability to contribute to a healthy family community (Doherty, 1997; Fiese, 2006). The purpose of this study was to develop the awareness of the value of family rituals and family rituals to promote family health. Therefore this study was to provide implications for the development of parent education programs that use family rituals to promote the family health of infants and young children.

References

Doherty, W. J. (1997). *The intentional family: simple rituals to strengthen family ties*. New York: Avon Books.

Eo, & Yoo (1995). A study on the development of the scale for measuring Family Strength. *Journal of Korean Home Management, 18*(1), 145-155.

Fiese, B. H., & Kline, C. A. (1993). Development of the Family Ritual Questionnaire(FRQ): Initial reliability and validation studies. *Journal of Family Psychology, 6*(3), 290-299.

Fiese, B. H. (2006). *Family routines and rituals*. New Haven, CT: Yale University Press.

A PRACTICE PROJECT TO PREVENT THE COOKBOOK MODEL AS MODUS OPERANDI FOR BIOCHEMISTRY LABORATORY LEARNING

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Abstract

Laboratory learning is a crucial component of chemistry and biochemistry instruction and should be conceived as a way to develop students' reasoning, technical or practical skills, introducing them into the scientific method principles. Nevertheless, the heavily criticized "expository instruction style", characterized by a cookbook nature, is still the most widespread style of laboratory instruction in our universities. Alternative learning styles based in the inquiry, discovery and problem-based pedagogical approaches, have been reported to promote students' problem solving skills, critical thought and self-confidence development.
We are currently involved in the Educative Innovation Project PIE17-065, funded by University of Malaga, aimed to improve the teaching practice of Biochemistry laboratory to undergraduate students. Based on an enzymatic analysis of glucose in soft-drinks we have developed a laboratory protocol as a part of a full practice project where students must work before and after the lab session, in order to prevent the cookbook model as modus operandi, therefore preventing the situation where the students get a first glimpse of the experiment protocol whereas they put on their lab coat. The learning activities have been designed to move our students from the passive role that characterizes the step-by-step procedures, to an active and critical attitude that starts before and remains after their laboratory session, also minimizing time, space, and equipment resources. Our results have shown that this experiment has improved the learning of both, future biochemists and chemists, which showed a very positive perception of the whole practical project.

Keywords: Laboratory instruction, hands-on learning/manipulative, biochemistry, higher education, science education.

1. Introduction: The teaching of enzymatic analysis to Biochemistry and Chemistry undergraduate students at the University of Malaga (Spain)

Applied Biochemistry has been designed as a practical biochemistry laboratory course for Biochemistry and Chemistry undergraduate students. Along this subject, students get a first contact with the world of research, facing experimental situations that they could find in a laboratory of chemistry or biochemistry, and awakening their critical thinking. Experimental work, carried out in groups of about 20 students each, consists of a protocol to investigate a problem that must be feasible to be solved in a short laboratory period.

One of the topics covered in *Applied Biochemistry* is *Enzymatic Analysis*, what means the quantitative determination of a substance by using an enzyme-catalyzed reaction. Along the last years, we have optimized an experimental protocol for the enzymatic determination of glucose concentrations in soft drinks to teach not only the principles of enzymatic analysis, but also to facilitate that students could critically compare different analytical methods, having to decide which is more suitable to solve a given experimental problem. Within the Educative Innovation Project PIE17-065, funded by University of Malaga, we have redesigned the previously used "step by step" laboratory experiment, turning it into a more complex practical program. With this new scheme we have pretended to turn the "cookbook nature" that characterizes most of the laboratory practices in our institution into a more participative style which could ensure the students participation before, during and after the laboratory session (Adams, 2009).
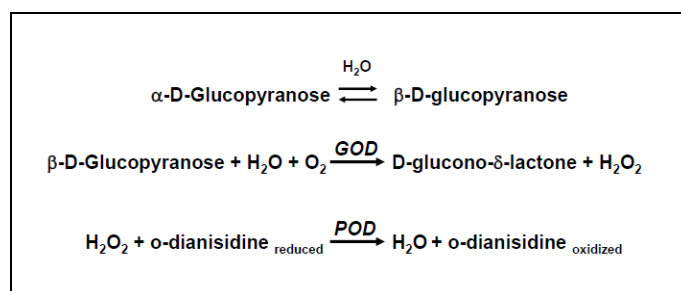
2. Objectives

Our main objective has been to move our students from the passive role that characterizes the step by step laboratory protocols to a more active position in their learning process, not limited to the acquisition of new technical competences, but also to improve their critical thinking skills.

3. Practical protocol

We have used a practical protocol based on the enzymatic determination of glucose by means of the coupled reactions of glucose oxidase and peroxidase (figure 1) (Hugget & Nixon, 1957). The kinetic constants of glucose oxidase allow the mentioned enzymatic reactions to be used in two different enzymatic analysis methods, end-point and the kinetic one, which can be carried out in a single reaction mixture, shortening and decreasing costs of the experimental work, so that both methods can be performed by students in a 3-4 hours session (Siedel, Deeg, & Ziegenhorn, 1984). This is especially interesting from a biochemical and a pedagogical point of view because it allows a critical discussion of the advantages and drawbacks of each method, providing students with some training in choosing which the most suitable method according to specific purposes is. Carbonated soft-drinks have been chosen as problem solutions because they help to arouse the interest of the students in the analyses, since many of them consume this kind of drinks and could be concerned about the impact of the sugar-sweetened beverage drinking on their health (Vartanian, Schwartz, & Brownell, 2007).

Figure 1. Scheme of enzymatic reactions used for the determination of glucose.
GOD= Glucose oxidase; POD = Peroxidase

$$\alpha\text{-D-Glucopyranose} \xrightleftharpoons{H_2O} \beta\text{-D-glucopyranose}$$

$$\beta\text{-D-Glucopyranose} + H_2O + O_2 \xrightarrow{GOD} \text{D-glucono-}\delta\text{-lactone} + H_2O_2$$

$$H_2O_2 + \text{o-dianisidine}_{\text{reduced}} \xrightarrow{POD} H_2O + \text{o-dianisidine}_{\text{oxidized}}$$

4. Design of the learning procedure

The summarized learning activities steps of the practical project, included:

1.   Introductory lecture in the classroom, where the teacher explained the major theoretical and experimental issues that students would need to understand in order to solve the proposed problems.

2.   Student-oriented homework, previous to the experimental session and aimed to make students think in what they will do in the laboratory, and how solutions and reagents should be prepared. It included numerical problems, specially buffers and enzymes solution calculations, and some specific questions regarding the "tricky points" along the protocol. After delivery by students, this homework was corrected by the instructor and returned before the laboratory session, so that students could use it as the experimental protocol.

3.   Laboratory session. The previous learning activities facilitated that students in a short period of time could directly go through the different steps of the practical protocol, collected the results and discussed them. This helped to optimize the laboratory time and resources, sometimes scarce and highly demanded at our institution.

4.   Students elaborated a full report where they had to critically evaluate the convenience of one protocol against the other considering sensitivity, selectivity, repeatability, accuracy, interferences and time consumed. They were asked to search in the available bibliography for alternative methods, and discuss their pros and cons for the measure of glucose concentrations in soft-drinks and other samples.

5. Results and discussion

Laboratory learning is one of the best ways to develop students' reasoning, technical or practical skills, and to introduce them into the scientific method principles. Nevertheless, the use of step-by-step recipes that must be followed by students without ever thinking or questioning what they do is very frequent in our universities, probably because of the need of maximizing the number of students that may perform the activity, shortening it and minimizing expenses and the instructor's work time (Domin, 1999). The use of alternative learning styles based in the inquiry, discovery and problem-based pedagogical approaches, have been reported to promote students' problem solving skills, critical thought and self-confidence development (Boyd-Kimball & Miller, 2018). In this sense, we have included what previously was a traditional laboratory protocol into a full experimental project in which students must work before and after the lab session, in order to prevent the cookbook model as *modus operandi*.

The achievement of the Learning Goals by students was evaluated by using an assessment test before the introductory classroom lesson, and by repeating this test after students had delivered their full report. This test, composed by some multiple choice and short open-questions, could be answered in just 15-20 min either at the beginning or at the end of any classroom lecture. Our results, obtained in 2016-17 course with undergraduate Biochemistry (3rd year) and Chemistry (4th year) students, indicated a significant improvement of the students' achievement of the learning goals. There was an increase in the average marks earned by both, Biochemistry and Chemistry undergraduate students, moving from 34 and 25% (pre-test) to 58 and 56% (post-test), respectively (it should also be pointed out that most of the studied topics were new for many students).

A post-course mixed questionnaire, elaborated by using the 1 to 4 Likert scale for most of the questions, and complemented with some other open answered questions, was used to evaluate the students' perception of this laboratory protocol. Our results revealed a very positive opinion of the whole practical project by both, future biochemists and chemists, who suggested that other practical lessons could be readapted according to the learning procedure used in this one.

6. Conclusion

The use of practical projects such as the one here presented, in which students do no limit to follow a "cookbook-type" laboratory protocol, may help to improve the learning outcome for both, future biochemists and chemists, which appeared to be more motivated and played a more active role in their education process.

References

Adams, D. J. (2009). Current trends in laboratory class teaching in university bioscience programmes. *Biosci. Educ. 13 (1)*, 1–14.

Boyd-Kimball, D., & Miller, K. R. (2018). From cookbook to research: redesigning an advanced Biochemistry laboratory. *J. Chem. Educ. 95 (1),* 62–67.

Domin, D. S. A (1999). Review of laboratory instruction styles. *J. Chem. Educ. 76 (4),* 543–547.

Huggett, A. S. G., & Nixon, D. A. (1957). Use of glucose oxidase, peroxidase, and o-dianisidine in determination of blood and urinary glucose. *Lancet, 270 (6991)*, 368–370.

Siedel, J., Deeg, R., & Ziegenhorn, J. (1984). Determination of metabolite concentrations by kinetic methods. In H. U. Bergmeyer (Ed.), *Methods of enzymatic analysis* (pp. 182-196). Weinheim, Germany: Verlag chemie.

Vartanian, L. R., Schwartz, M. B., & Brownell, K. D. (2007). Effects of soft drink consumption on nutrition and health: A systematic review and meta-analysis. *Am. J. Public Health 97 (4),* 667-675.

KNOWLEDGE OF KOSOVAR ADOLESCENTS IN DETERMINING EMOTIONS BASED ON FEELINGS

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Abstract

Feelings are an essential factor in the lifelong learning process. They play an important role in the development of constructions and personal meanings of reality. Such claim is supported by many other scientific studies. According to Scherer in 2003, emotions play an essential role in interaction societies by carrying out important regulatory functions within the human body and brain as well as facilitating the decision-making process in a rational way (Damasio, 1994, Scherer et al, 2003 Russell et al., 2003; Sander et al., 2005a). One the other side, Picard attaches great importance to the appointment of emotions in 2001 highlighting emotional skills as the ability to recognize, label and understand their feelings and other ones.

Based on the importance of emotions and their impact on our lives, this study aims to measure the knowledge of Kosovar adolescents on emotions and nature. The results of this study are based on the feedback of 96 adolescents aged 15- 21 years old (75% of them were aged 15-18 years). The data were collected through a self-designed questionnaire for measuring the emotional knowledge that matches the basic feelings. The questionnaire contains a total of 7 basic feelings accompanied by 32 different emotions where the subject is asked to place the appropriate emotions in the field that corresponds to the feeling.

In general, results of this study show that adolescents do not possess enough knowledge about emotions and their nature. However, participants showed satisfactory results in recognizing positive emotions by referring to the feeling of happiness. While none of the respondents have managed to put all the appropriate emotions that coincide with negative emotions, namely being aggression, fear and jealousy.

Keywords: Emotions, feelings, adolescents.

1. Introduction

Feelings play an essential role in the development of teaching since it is through our emotional world that we develop constructs and personal meanings from reality. According to Scherer and his colleagues in 2003, emotions play an essential role in social interactions, important regulatory and exploitative functions within the human body and brain and facilitate the rational decision of receiving and perceiving (Damasio, 1994). Emotional skills are the ability to recognize, label and understand feelings in oneself and in others. It is a prerequisite for emotional regulation and successful interpersonal reaction to interaction and problem solving (Denham, 1986; Webster-Stratton, 1999).

2. Method

2.1. Sample
A sample of 96 adolescents whose age was 15 to 21 years old (75% of them aged 15-18 years), were recruited from primary school Ismail Qemaili, Gjergj Fishta High School and Heimerer College in Prishtina. All participants were Albanians and with normal development of cognitive skills.

2.2. Procedure

Initially, the permission was provided by the institutions for conducting the research. Parents' permission to survey their children was also obtained. The execution of a questionnaire took about 20 minutes and the received data were stored with full confidence.

2.3. Instrument

Data were collected through a self-designed questionnaire for measuring the knowledge of emotions that possess basic feelings. The questionnaire contained a total of 7 basic feelings (happiness, disappointment, anger, fear, confusion, hate and jealousy) coupled with 32 different emotions where the subject is asked to set the appropriate emotions in the field corresponding to the feeling. The test was conducted in Albanian Language, including gender, age, study year, academic success and economic status.

3. Results

Figure 1. The ability to recognize positive emotions.
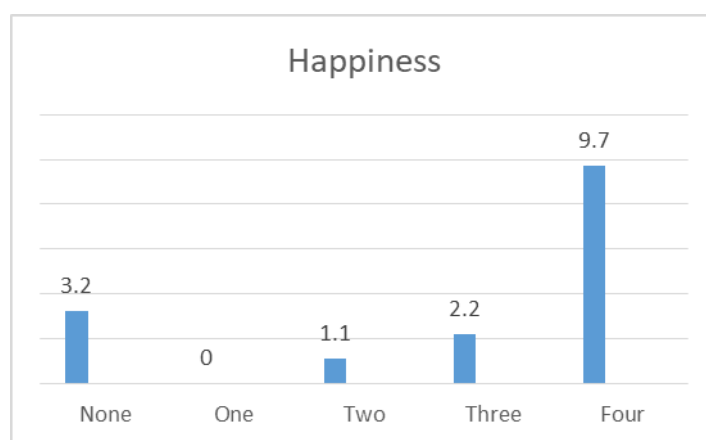
Based on the discursive results we report that 3.2% of the respondents did not label the happy emotions as such. While about 11% of respondents have labeled five happy emotions as such.

Figure 2. The ability to recognize negative emotions.
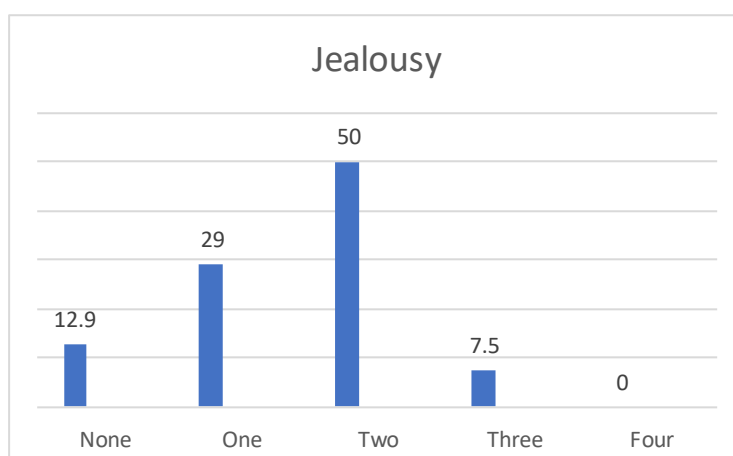
As seen in the table, 12.9% of the respondents did not label the emotions of jealousy as such, while 50% of the respondents could only distinguish two emotions of jealousy.

4. Discussion

Based on the charts showed above, the first hypothesis is accepted due to the fairly low percentage of respondents who have labelled all the emotions that match a certain feeling.

The second hypothesis is also accepted as based on the graphs and their comparison which confirm that the graph that shows the respondents' results in the "happiness" category has the highest percentage of respondents who have defined all the relevant emotions included in the questionnaire.

Results show that the feeling of happiness has the highest percentage of all respondents who have filled in all the categories with happy feelings. Furthermore, none of the respondents have managed to put all the emotions in the anger, fear and jealousy feelings.

Results show that respondents have better knowledge about emotions despite other feelings, while also showing that respondents also present difficulty determining emotions in anger, fear and jealousy feelings.

5. Conclusions and recommendations

The results of this research substantiate the lack of knowledge of adolescents on basic emotions, thus justifying the weak results they have shown in this research. To improve the current situation in this aspect, it is recommended:
• Supporting literature in Albanian language in schools that tell more about emotions and feelings during our life process and their importance.
• More professionals in the field of Psychology explaining the impact of emotions in other areas.

References

Damasio, A., R., 1994. Descartes Error: Emotion, Reason, and the Human Brain. Putnam/Grossed Press.

Denham, S. A. (1986). Social cognition, prosocial behaviour and emotion in pre-schoolers: Contextual validation. *Child Development*, 57, 194-201.

Picard, R., W., 2001. Building hall: Computers that sense, recognize, and respond to human emotion. In: Society of Photo-Optical Instrumentation Engineers. Vol. 4299 of Human Vision and Electronic Imaging VI. pp. 518–523.

Russell, J., A., Bachorowski, J., Fernandez-Dols, J., 2003. Facial and vocal expressions of emotion. Annual Review of Psychology.

Sander, D., Grand jean, D., Scherer, K., R., 2005b. A systems approach to appraisal mechanisms in emotion. Neural Net. 18 (4), 317–352.

Scherer, K., R., 2003. Vocal communication of emotion: a review of research paradigms. Speech Common. 40 (1-2), 227–256.

Picard, R., W., 2001. Building hall: Computers that sense, recognize, and respond to human emotion. In: Society of Photo-Optical Instrumentation Engineers. Vol. 4299 of Human Vision and Electronic Imaging VI. pp. 518–523.

LEARNING CONTRACT, CO-OPERATIVE AND FLIPPED LEARNING AS USEFUL TOOLS FOR STUDYING METABOLISM

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Abstract

Undergraduate students in Biology identify *Metabolic Biochemistry* as a particularly difficult subject. This is due to the fact that students need to interconnect properly all the contents of its syllabus throughout their study of the subject in order to get a global insight of the complex regulatory features controlling metabolic pathways within the metabolic network under different physiologic and pathologic conditions, as well as metabolism as a whole. Due to these objective difficulties, a high percentage of our students face the study of this subject as a very hard task beyond their forces and capacities. This perception leads to high rates of premature dropout. In previous years, less than 40% of all the registered students attended the examinations of *Metabolic Biochemistry* (a subject in the second year of the Degree of Biology at our University). Even worse, less than 25% of our students passed the exams.

From the academic year 2015/16 on, we are developing innovative teaching projects (PIE15-163 and PIE17-145, funded by University of Malaga) aimed to increase our student loyalty to the subject (and hence to increase their attendance to exams) and to help them to learn more effectively metabolism and its regulation. These innovative teaching projects are based on the use of several powerful tools: a learning contract and problem-based learning within the framework of group tasks promoting an actual collaborative learning in a flipped classroom.

Keywords: *Learning contract, co-operative learning, flipped learning, problem-based learning, metabolism.*

1. Introduction

Metabolism is a huge, highly interconnected and dynamic network that exhibits the features of a modular and hierarchic network. The dynamic metabolic network is highly flexible and capable of rewiring allowing for its adaptation to ever-changing environmental and internal factors. Furthermore, complex regulatory networks overlay on the metabolic one. All this contributes to the well known fact that the study of metabolism and its regulation and integration is a particularly difficult subject for undergraduate students in Biology and related sciences.

At the University of Málaga (Spain), the Degree in Biology offers two mandatory general biochemistry courses to second year students: *Bioquímica I* and *Bioquímica II*, devoted to the study of structural biology and enzymology, and metabolic regulation, respectively. *Bioquimica II* (from now on, *Metabolic Biochemistry*) is perceived by many of our second year students as a difficult subject demanding study efforts far beyond their forces. This perception yielded in previous courses to high rates of premature dropout. In fact, less than 40% of enrolled students finally attended the examinations and less than 25% of enrolled students passed the exams. From the academic year 2015/16 two consecutive innovative teaching projects (PIE15-163 and PIE17-145) are trying to help and overcome these difficulties and to increase the previously mentioned percentages. These projects have got financial support from the University of Málaga.

2. Design

In the Spanish University systems, students' records in each course are scored in a numerical scale from 0 to 10, being 5 the minimum score required to pass a course. In *Metabolic Regulation* the score is the integration of the results of exams (up to 70% of total score) and a series of tasks corresponding to a continuous evaluation (up to 30% of total score). Under the framework of the innovative teaching projects PIE15-163 and PIE17-145, volunteer students are enrolled to an alternative set of tasks for continuous evaluation. Both students and professors sign a learning contract specifying the commitments linked to the contract. The fulfilment of the contract warrants a certain minimum score to students, being the rest of the final scores dependent on the performance of the different tasks and their evaluation. The different tasks were designed to boost the use of co-operative (Van der Linden et al., 2000) and flipped learning (Bergmann and Sams, 2012) as useful tools for studying metabolism.

3. Objective

The main declared goal of the innovative teaching projects PIE15-163 and PIE17-145 is to contribute to increase both the percentages of students attending and passing exams in the *Metabolic Regulation* course. However, these projects also have the important target of changing certain attitudes of students, decreasing their competitiveness and increasing their cooperativity by stimulating their engagement with procedures of co-operative study in a class less hierarchical and more horizontal, with the professor in the role of a facilitator/guide in a flipped classroom.

4. Results and discussion

A detailed description of the provisional results obtained with our innovative teaching projects PIE15-163 and PIE17-145 is far beyond the scopes of this short article. Herein we should only mention that the main goals of the projects have been already achieved.

The use of flipped classroom leaved time to introduce both virtual and face co-operative tasks. They were well design co-operative tasks actually contributing to boost co-operative attitudes among students. These tasks fulfilled the five essential requirements for an efficient co-operative learning (Johnson et al., 1994): 1) Positive interdependence. 2) Individual and group accountability. 3) Promotive interaction. 4) Appropriate use of social skills. And 5) Group processing.

The learning contract as used by us revealed to be a very efficient tool to increase our student loyalty to the subject (and hence to increase their attendance to exams). In fact, the percentage of students who had signed the learning contract and attended the final exams almost doubled the previous figures, reaching up to an 80%. Even more important, 88% of these students passed their exams, in high contrast with only a 37% of students with scores of 5 or higher among those students who did not sign the learning contract and attended the final exams.

The innovative teaching projects PIE15-163 and PIE17-145 have already yielded some scientific production (García-Ponce et al., 2017a, 2017b, Medina et al, 2017). A detailed description of the project PIE15-163 and its results, along with a number of conceptual and empirical chapters are contained in the book (in Spanish) *The Teaching of Metabolism: Challenges and Opportunities* (Medina et al, 2017), available in https://hdl.handle.net/10630/15124

References

Bergmann, J. & Sams, A. (2012). *Flip your Classroom*. Eugene, Oregon: ISTE (International Society for Technology in Education).

García-Ponce, A. L., Blanco-López, A., Quesada, A. R., Alonso Carrión, F. J., Suárez, M. F. & Medina, M. A. (2017). Use of learning contract and problem.based learning in a metabolic biochemistry course for undergraduates in Biology. In pixel (Ed.), *New perspectives in Science Education (6th edition) Conference Proceedings* (249-253). Padova: Libreriauniversitaria.it.

García-Ponce, A. L., Blanco-López, A., Quesada, A. R., Martínez-Poveda, B. & Medina, M. A. (2017). Is problem-based learning a motivating didactic strategy for undergraduate science students to study metabolism? In *FEBS3+ Book of Abstracts* (83-84). Barcelona: Rubes Editorial.

Johnson, D. W., Johnson, R. T. & Holubec, E. J. (1994). *Cooperative Learning in the Classroom*. Alexandria: Association for Supervision and Curriculum Development.

Medina, M. A., Suárez, M. F. & Alonso Carrión, F. J. (2017). *La Enseñanza del Metabolismo: Retos y Oportunidades*. Available in https://hdl.handle.net/10630/15124

Van der Linden, J., Erkens, G., Schmidt, H. & Renshaw, P. (2000). Collaborative learning. In Simons, R. J., Van der Linden, J. & Duffy, T. (Eds.), *New Learning* (37-54). Dordrecht: Kluwer.

A JAMAICA STUDY ABROAD PROGRAM OFFERED AT AN HBCU: WHO, WHAT, HOW

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Abstract

Research has documented the motivation, benefits and barriers of studying abroad (Sanchez, Fornerino and Mengxia, 2006; Sutton and Rubin, 2004; Taylor and Rivera, 2011; Henry, 2014; and Dwyer, 2016). College faculty has advocated study abroad programs to their students as opportunities to become world citizens who appreciate cultural differences. Future employers of 21st century students value many of the skills these students acquire during studying abroad experiences, especially cultural adaptability, flexibility and a greater tolerance of ambiguity.

This poster session showcases a Jamaica Study Abroad Program (JSAP) offered at an HBCU (Historically Black Colleges and Universities). Institutions of higher education in the United States HBCU's serve to educate the African-American community. The three-week intensive summer Jamaica Study Abroad program described here provides participating students with a historical overview of the Caribbean and an understanding of Jamaican culture offering students an opportunity to develop a sense of the sociological, economic, and political realities faced by the peoples of Jamaica and the Caribbean. The accelerated program provides academic enrichment, professional exposure, and cultural insights for participating students and faculty. Lectures/discussions and cultural field trips are geared specifically toward providing background information for the completion of an independent research project and a multimedia project presentation.

This Study Abroad experience affords participating American students academic interactions and cultural immersion with Jamaican students and scholars for the exchange of ideas and discussion of differences. Students leave the program with a better understanding of and greater appreciation for how other people live in the world.

Keywords: Study Abroad, Jamaican Culture, HBCU's.

Virtual Presentations

HOW TO EFFECTIVELY DEVELOP FACULTY MENTORSHIP PROGRAMS

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Abstract

Although higher education faculty positions have traditionally been viewed as autonomous (Desselle & Semsick, 2016), universities/colleges are beginning to offer more mentorship experiences for their faculty members. Through these mentorship programs, faculty are able to enhance their teaching, scholarship, and service commitments. Moreover, mentorship programs often result in faculty having overall higher job satisfaction and gaining a more in-depth understanding of their employment roles and responsibilities. Because of mentorship programs, faculty may be able to create a collegial culture that is supportive of the institution, faculty, staff, and students.

Keywords: Mentorship, faculty development, online education.

1. Introduction

Faculty members play a vital role in higher education settings. These individuals serve their institutions by providing students effective and high quality instruction and by representing the university/college through their various professional responsibilities (e.g., teaching, scholarship, service work). To ensure that faculty transition into their new roles successfully, many programs implement faculty mentorship programs in which veteran faculty are able to provide guidance and advice to new incoming faculty members. Mentorship has been defined as an "international activity whereby mentors execute their responsibilities with conscious effort in a nurturing relationship that has a goal of fostering the protégés potential" (Jackevicius, Le, Nazer, Hess, Wang, & Law, p. 1). Further, the University of Michigan Dearborn (n.d.) described mentorship as helping new faculty acclimate to the department and university and to establish an environment of collegiality and community.

2. Mentorship in higher education

The inclusion of mentorship programs in higher education has resulted in faculty indicating greater levels in job satisfaction, commitment, and productivity (Law, Bottenberg, Brozick, Currie, & DiVall, 2014). Mentoring is often considered to be a critical component of career development and advancement. Therefore, the execution of these types of programs may be essential for faculty success. Phillips, Dennison, and Cox (2015) suggested that good mentors contain various characteristics including being open-minded, having a willingness to share, and observing things from multiple perspectives. Mentoring should also contain the dimensions of relationship, reciprocity, and reflection and as Jackevicius et al. (2014) shared, should include support, challenge, and vision. Faculty mentors are also able to provide guidance in a diverse range of areas (e.g., policies) and on various job roles and responsibilities. For example, mentors can supply new faculty members with constructive feedback and guidance on scholarship, presentations, grant proposals, professional goals, teaching philosophy statements, student difficulties, and the roles of graduate assistants (Phillips, et al., 2015). Further, the implementation of faculty mentorship programs can aide instructors in their development of skill sets focused on prioritizing career goals, gaining new skills, and scheduling challenges (Bean, Lucas, & Hyers, 2014).

3. Mentoring Practices

Johnson (2016) recommended faculty frame their mentorships as "fiduciary" in which trust and confidence is imparted to ensure that they act in their mentee's best interests. He further suggested that the core ethical principals of beneficence, nonmaleficence, autonomy, fidelity, fairness, and privacy be used to ensure appropriate mentoring decisions are undertaken. Additional key characteristics of mentor

relationships outlined by Eller, Lev, and Feurer (2014) include open lines of communication, accessibility, creation of goals and challenges, inspiration, a caring relationship, respect and trust, an exchange of knowledge, collaboration, and role modeling. In addition to these characteristics, the University of Illinois (2012) outlined faculty mentors should be advocates, research guides, evaluators, and professional coaches. Although many mentorship studies have been conducted in face-to-face learning contexts, these same mentorship characteristics, roles, and responsibilities are similarly imperative in online academic settings. Essentially, as asserted by Long, Fish, Kuhn, and Sowders (2010) the inclusion of long term, effective mentorship relationships can be beneficial for the institution and its students and faculty.

4. Online mentorship programs

Faculty may need to also better understand how to best support online learners and to help them progress through their studies. Having a virtual online faculty-to-faculty mentor system could be imperative in ensuring faculty feel supportive in their roles and that they receive guidance in better understanding how to provide resources and support to address the unique needs of their online learners. For example, Jackevicius et al. (2014) discovered that junior faculty needed most guidance and mentorship on areas that included time management, prioritization, and work-life balance. These are all areas that online students who are characterized as working professionals may also need guidance on as well. Specifically, high attrition rates for doctoral students (Bagaka, Badillo, Bransteter, & Rispinto, 2015) may require faculty to re-evaluate their mentorship practices to ensure student success.

Providing students positive online mentorship relationships could be a powerful factor in increasing student retention and program completion rates. This may be of particular importance given the institutional beliefs that online education enrollments will continue to increase and will be a significant factor in their long-term strategies (Williams, Layne, & Ice, 2014). By faculty receiving mentoring experiences in these areas, they may be more successful in distilling these skills in their learners. This consequently may have positive results in enhancing student experiences and retention rates.

Due to the unique challenges that may occur in online learning environments, Portugal (2015) suggested that faculty in online educational contexts may be more likely to possess higher levels of commitment in providing their learners individualized teaching and learning to meet their unique academic needs. Billlings and Halstead (2016) also shared that the mentorship relationships require faculty to devote time and energy and possess skills in teamwork and negotiation to ensure dissertation committee members provide adequate support to doctoral students. As a result, faculty need to be dedicated to their mentorship responsibilities and feel they have adequate institutional provisions to provide the time, energy, and resources to students for their continual academic progress and success. To help faculty feel supported in their mentorship endeavors, they could be provided workload credits, access to technology platforms (e.g., video conferencing software), and adequate training to ensure that they are able to put forth the time and energy needed to support their learners.

Adjunct faculty are also able to gain valuable skills and may experience increased job satisfaction when they have access to mentorship relationships from core program faculty. Although adjunct faculty may possess different mentorship needs, Branngan and Oriol (2014) explained that they may be provided inadequate timeframes to prepare for their classes and typically do not receive sufficient support for activities related to teaching, service, and scholarship, which could all be addressed through mentorship experiences. Insufficient mentorship opportunities for adjunct faculty may be problematic as programs continue to employ individuals in these positions at higher rates. Indeed, the American Association of University Professors (n.d.) indicated that adjuncts constitute approximately 50% of faculty appointment.

5. Conclusion

As enrollment in doctoral online programs continues to increase, universities/colleges will need to invest more resources into better understanding how to create virtual mentorship relationships for their faculty members. These relationships are invaluable in providing faculty support and continual enhancement of student success. In fact, Williams, Layne, and Ice (2014) proclaimed that the lack of sufficient mentoring for online faculty results in ineffective teaching and feelings of disconnect and being unsupported. To avoid faculty and students experiencing negative online experiences, institutions may need to re-evaluate their current mentor systems to make certain it focuses on key mentorship characteristics and incorporates pertinent mentorship roles and responsibilities.

References

American Association of University Professors (n.d.). Background facts on contingent faculty. Retrieved from https://www.aaup.org/issues/contingency/background-facts

Bawa, P. (2016). Retention in online courses: Exploring issues and solutions – a literature review. *Sage Open.* Retrieved form http://journals.sagepub.com/doi/pdf/10.1177/2158244015621777

Bean, N., Lucas, L., & Hyers, L. (2014). Mentoring in higher education should be the norm to assure success: Lessons learned from the faculty mentoring program, West Chester University, 2008-2001. *Mentoring & Tutoring: Partnership in Learning, 22* (1), 56-73.

Billlings, D. & Halstead, J. (2016). *Teaching in nursing* (5th ed.). St. Louis, MO: Elsevier.

Branngan , K., & Oriol, M. (2014). A model for orientation and mentoring of online adjunct faculty in nursing. *Nursing Education Perspectives, 35*(2) 128-130.

Desselle, S. & Semsick, G. (2016). Identification and development of items comprising organization citizenship behaviors among pharmacy faculty. *American Journal of Pharmaceutical Education, 80*(10). Retrieved from http://www.ajpe.org/doi/full/10.5688/ajpe8010168

Eller, L., Lev, E., & Feurer, A. (2014). Key components of an effective mentorship relationship: A qualitative study. *Nurse Education Today, 34*(5), 815-820.

Jackevicius, C., Le, J., Nazer, J., Hess, K., Wang, J. & Law, A. (2014). A formal mentorship program for faculty development. *American Journal of Pharmaceutical Education, 78*(5), 100-108.

Johnson, W. (2016). *On being a mentor: A guide for higher education faculty* (2nd edition). New York, NY: Routledge.

Law, A., Bottenberg, M., Brozick, A., Currie, J., & DiVall, M. (2014). A checklist for the development of faculty mentorship programs. *American Journal of Pharmaceutical Education, 78*(5), 1-10.

Phillips, S., Dennison, S., & Cox, M. (2015). *Faculty mentoring: A practical manual for mentors, mentees, administrators, and faculty developers*. Sterling, VA. Stylus Publishing.

Portugal, L. (2015). Work ethic, characteristics, attributes, and traits of successful online faculty. *Online Journal of Distance Learning Administration, 18*(1). Retrieved from http://www.westga.edu/~distance/ojdla/spring181/portugal181.html?utm_content=buffer701a5&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer

University of Illinois (2012). *Synopsis from the deliberate mentor: Performing the role(s) with thought and purpose.* Retrieved from http://www.grad.illinois.edu/sites/default/files/pdfs/mentoringsynopsis2012.pdf

University of Michigan Dearborn (n.d.). Faculty mentoring. Retrieved from https://umdearborn.edu/faculty-staff/faculty-senate/faculty-mentoring-0

Williams, T., Layne, M., & Ice, P. (2014). Online faculty perceptions on effective faculty mentoring: A qualitative study. *Online Journal of Distance Learning Administration, 17*(2). Retrieved from http://www.westga.edu/~distance/ojdla/summer172/Williams_Layne_Ice172.html

BUILDING INTERPERSONAL RELATIONSHIPS IN AN ADULT ONLINE LEARNING COMMUNITY

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Abstract

Online learning communities have become a convenience for some adult learners who want to continue their education at university institutions. The population in the online learning communities is significantly increasing. As a result, instructors research for tools to implement in their online learning communities in order to build interpersonal relationship and promote student success. Building interpersonal relationship is a component for student success. Integrating specific technological components is vital to understanding the intricate dynamics that go into the building and sustaining teacher and student relationships. The study significance provides a confirmation that online communities can be identified as the suitable medium particularly for constructivist online learning and teaching, thus, motivates adult online learners in higher education. The concepts presented in this literature review can therefore be applied in enriching the student learning experience. This paper will establish the importance of building interpersonal relationships through the review of current research, which promotes the connection between interpersonal relationships and students' success. This paper will explore and share three software applications used in an online adult learning community to build interpersonal relationships and student success. How are the applications used in the online adult learning community? How does L-R-Z build interpersonal relationships in an online adult learning community?

Keywords: Interpersonal relationships; student success, LOOM, REMIND, ZOOM.

1. Online learning community

1.1. Interpersonal interaction in online adult learning

There has over the recent past been a significant increase in adoption of web-based technology for higher education teaching and learning as demonstrated by various studies. The technological advancements has depicted in this literature review, has consequently made it possible for adult students to continue their education. According to the study by York & Richardson (2012), the use of technology within an online learning environment is often with the aim of promoting interaction among participants, to integrate learning social experiences, and to support collaboration. Booth (2012) observes that, the use of online learning environment is as a result of different communication modes to promote the learning process. The study observes that there is the utilization of online learning communities and collaborative online learning. These have a great role in supplementing traditional classroom education.

The study by Angeli, Valanides & Bonk (2013) observes that collaborative learning among the adult learners' impacts greatly in building interpersonal relationship. This is because the process promotes the formation of small groups of learners who focus on working together in order address real-life problems as well as complete common tasks through the assistance of communication tools offered by the online environment. Through the engagement in such learning, there is the development of deep learning as well as the existence of high motivation levels due to joint problem-solving efforts manifested through online discussion forums. This greatly impacts in contributing to the academic success of the online adult learning. Furthermore, as observed by York & Richardson (2012), the online learning environment has resulted in an opportunity in which there is the use of collaborative and interactive learning models. As further illustrated by Cheung (2012), the existence of a variety of learning approaches in online learning offers a rich and interactive learning environment. As a result, the adult students, from various social and educational background, are in a position to fully engage with the course content through the use of different media and consequently lead to the effectiveness of the learning process. This is also in agreement with the study by Brindley, Walti, & Blaschke (2009), which notes that online learning

presents an opportunity towards the development of highly social learning environment that demonstrates high students and teachers' interactivity which promotes the student success.

2. Software applications in online adult learning

2.1. Zoom best practices for online learning

A variety of technological advancement has enhanced learner interaction in online learning. The establishment of Zoom platform has made it possible for a variety of online interaction processes. Zoom is recognized as a cloud-based platform which can promote high-quality audio and video conferencing (Angeli, Valanides & Bonk, 2013). The tools capability to connect classrooms as well as its possession of features such as screen sharing, hand raising, chat, and recording have a significant contribution in building interpersonal relationship while engaging in an adult online learning community (Cheung, 2012). Through the features of the tool, it makes it possible for adult learners to have discussion forums. The online discussion forums further provide the student with an opportunity construct hypothesis and have multiple perspective views of information. As a result, different perspective interactions can be performed through reasoning, questioning, connection of ideas, challenging of accepted beliefs, and the development of problem-solving techniques essential for meaningful learning (Booth, 2012).

2.2. Loom: Demonstrates live aspect of learning through screencasting

Technological advancements have further made it possible for online learners to share their work virtually (Booth, 2012). This is demonstrated through the use of Loom software. Loom is recognized as a web-based screencasting tool that allows one to record a video and also in a position to share it over the email or social media. According to the study by Angeli, Valanides & Bonk (2013), since learners are, therefore, in a position to have active participation in online activities regardless of their location and time, they can reflect on the diverse viewpoints. As depicted in the study by Cheung (2012), interpersonal relationship is further improved through the utilization of the technology due to its digital storytelling component, thus, being possible for the adult learners to create and share their content. In this case, therefore, the technological process promotes learner-learner and learner-instructor types of interpersonal interactions.

Moreover, as also observed by Brindley, Walti, & Blaschke (2009), due to the involvement of people in the practice, their relations, as well as interactions, becomes a crucial aspect of their learning. In this case, therefore, their learning is situated in their online practice, relations, and culture that each of them is part of, thus, making the learning a community process (Cheung, 2012). These learning approaches are enhanced by the tool due to its ability to promote demonstrative learning. This is especially where it provides the students with an opportunity to create and share their learning. The software's ability to promote interactive feedback further contributes to building interpersonal relationships among the adult students, thus, promoting reflective learning that results in students' success (Booth, 2012).

2.3. REMIND eTool

The interaction between the instructor and the student at times become a challenge due to the need for frequent updates concerning upcoming schedules that concern their learning process (Booth, 2012). However, the establishment of REMIND platform has greatly contributed to enhancing communication between the instructor and the student. REMIND is an eTool that develops a connection between the instructors and the students by the use of brief messages that are directly sent the students' mobile phones (Walker, 2014). As demonstrated in the research study by Brindley, Walti, & Blaschke (2009), dialogue and collaboration enable the identification and reconciliation of differences between the instructor and the student. This is especially because the tool as an option for a two-way communication, and thus, with the use of short text messages interaction over the phone, the process saves time and makes messaging less cumbersome in comparison to the use of e-mail exchange.

In this case, therefore, with the use of the REMIND tool, it assists students to succeed in a variety of ways by broadening communication interaction possibilities and the limits associated to the classroom space (York, & Richardson, 2012). First, with the use of the tool, interactivity is enhanced through chats on brief assignment questions among the students. Moreover, with the use of the tool, the instructor can schedule reminders concerning uncommon events, as well as about their looming assignments. As a result of the enhanced interpersonal relationships through the use of the tool, the students will always be updated (Cheung, 2012). The process, therefore, promotes collaborative interaction, which consequently improves students' success in their online learning.

References

Angeli, C., Valanides, N., & Bonk, C. (2013). Communication in a Web-based conferencing system: The quality of computer-mediated interactions. *British Journal of Educational Technology 34*(1), 31–43.

Booth, S. E. (2012). Cultivating knowledge sharing and trust in online communities for educators. *Journal of Educational Computing Research, 47*(1), 1–31.

Brindley, J. E., Walti, C., & Blaschke, L. M. (2009). Creating Effective Collaborative Learning

Groups in an Online Environment. *International Review of Research in Open and Distance Learning, 10*(3), 3-27.

Cheung, S. K. S., & ICHL. (2012). *Hybrid learning: 5th international conference, ICHL 2012, Guangzhou, China, August 13-15, 2012; proceedings*. Berlin: Springer.

Walker L, J. (2014). *eTools: Using Remind.com in Classroom*. New York: University Press.

York, C. S., & Richardson, J. C. (2012). Interpersonal Interaction in Online Learning:

Experienced Online Instructors' Perceptions of Influencing Factors. *Journal of Asynchronous Learning Networks, 16,* 4, 83-98.

PERCEPTIONS OF SOUTH AFRICAN FIRST YEAR PHYSICS STUDENTS ON THE EFFICACY OF LABORATORY PRACTICAL WORK

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Abstract

Lack of meaningful opportunities for exposure to practical work at various schools in South Africa renders the performance and assessment of physics practical work at university level a daunting task for both students and the academic personnel. This reality can partly be attributed to teachers' lack of confidence in conducting science investigations and lack of resources to perform meaningful practical work at various schools within the broader South African context. In view of these key practical considerations, first year physics students at a South African university were exposed to tailor-made physics practical work after which a questionnaire was administered to establish their views on the efficacy of laboratory practical work. In terms of the intrinsic requirements of the concomitant academic program enrolled for, students are required to obtain pass credits for both practical and theory modules existing as two separate components. More specifically, the compilation of the experimental report is an arduous task which requires considerable effort and commitment on the part of students for which appropriate assistance with various technical aspects is provided. The students constituted a purposive sample within the context of this study. The students' views on the efficacy of the activities underpinning practical work were largely positive and this augers well for meaningful development and acquisition of an essential repertoire of practical skills necessary for successful navigation of science studies. The theoretical implications for meaningful enhancement of scientific literacy are discussed.

Keywords: *Laboratory practical work, efficacy, practical skills, scientific literacy.*

1. Introduction

Practical work is largely viewed as an essential tenet in science education. The raging discourse about the effectiveness of practical work in science education gravitates towards a confluence of various key considerations. In particular, one of the prevailing assertions points to the fact that laboratory work has found a central place in the teaching and learning of physics in schools and universities (Vilaythong, 2011). As a further consideration, it has been assumed that laboratory experiences can make physics more real and illustrate the way physicists work in order to gain answers and offer insights into the physical world (Vilaythong, 2011). While practical work plays a significant role in helping students to make links between the domain of objects and observable properties as well as events and domain of ideas (Millar, 2004), laboratories are, however, expensive in terms of resources and working time (Vilaythong, 2011). Declining resources at universities threaten to reduce the extent of experimental work in physics courses in the future (Hanif, Sneddon, Ahmadi, & Reid, 2009) and this potential threat appears to be a pervasive reality facing South African universities. This study primarily focused on perceptions of South African first year physics students on the efficacy of laboratory practical work.

2. The purpose of practical work in science

Substantive arguments have been advanced in an attempt to make sense of the aims of practical work in science, namely, cognitive arguments, affective arguments and skills arguments (Wellington, 1998). Cognitive arguments advocate that practical work can improve understanding of science and promote conceptual development through visualisation of laws and theories of science thereby providing opportunities for illustrating, verifying or affirming theory (Wellington, 1998). Affective arguments advocate that practical work provides motivation and excitement as well as the generation of interest and enthusiasm (Wellington, 1998). Skills arguments advocate that practical work promotes development of

higher-level transferable skills such as observation, measurement, prediction and inference (Wellington, 1998).

On the contrary, several counter arguments to all these claims for practical work have been advanced. These arguments are premised on the notions that doing science and understanding science theories are two different entities (Leach & Scott, 1995), and that there is evidence that many students are not very positive about doing experiments (Murphy & Qualter, 1990) as well as the existence of the evidence that the transferability of skills is limited (Lave, 1988). Clearly, the discourse pertaining to the aims and purpose of practical work is a highly contested terrain. It has to be pointed out that the plurality of espoused aims for practical work in science makes the task of assessment increasingly difficult (Bennett & Kennedy, 2001).

3. The place of practical work within the science curriculum

It is imperative to point out that the centrality of the laboratory to the teaching of science has become an unquestioned dependency which needs to be re-examined and weakened if not broken altogether (Osborne, 1998). Hodson (2001) argues that despite a shift of emphasis towards learning outcomes, the evidence suggests that there is a chasm between what teachers identify as their outcomes before lessons and the outcomes that their students perceive. Furthermore, despite the aim of curriculum reform at improving the quality of practical work, students spend too much time following 'recipes' and, consequently, practising lower level skills (Tamir & Lunetta, 1981) leading to failure to perceive the conceptual and procedural understandings as intended goals for the laboratory activities (Lunetta, Hofstein, & Clough, 2007).

4. Research design and methodology

This study adopted a cohort design as it involved participants who are united by some commonality or similarity (Healy & Devane, 2011). The cohort consisted of first year physics students at a South African university who were exposed to tailor-made physics practical work after which a *Student Perceptions of the Value of Physics Laboratories Questionnaire* developed by Deacon and Hajek (2011) was administered to establish their views on the efficacy of laboratory practical work. In terms of the intrinsic requirements of the concomitant academic program enrolled for, students are required to obtain pass credits for both practical and theory modules existing as two separate components. The students constituted a purposive sample within the context of this study.

5. Results and discussion

Table 1 below provides distribution of students' responses in terms of mean scores for each item. Students' responses to the questionnaire were largely positive. The development of scientific literacy forms an integral part of the key objectives underpinning practical work. Commensurate with this assertion, the majority of the students believed that their involvement in practical work improved their physics knowledge as responses to the items, *"The labs contributed to my knowledge and understanding of physics"* and *"The labs helped to improve my lab skills and techniques"*, attest. Tiberghien (2000) argues that the fundamental purpose of practical work is to help students to make links between two domains, namely: the domain of objects (things we can see and handle) and the domain of ideas (which we cannot observe directly). Within the context of this inquiry, students were challenged to make links between the laboratory equipment (things they could see and handle) utilized as part of the experimental investigation. Meaningful opportunities were also provided for students to engage in a critical reflection on the theoretical background (domain of ideas) associated with the experimental investigation.

Students believed that involvement in practical work served to enhance their data interpretation skills. This is consistent with a study conducted by Hanif, Sneddon, Ahmadi and Reid (2009) which found that laboratory practical work improves students' practical skills and their ability to understand theory. The creation of a conducive laboratory environment is central to meaningful development of laboratory skills. To this end, it is crucially important that instructors are able to distinguish between activities of high and low learning demand in order to be able to provide appropriate amount of support for students' learning and not to plan too difficult activities (Abrahams & Millar, 2008). Students expressed negative sentiments about the pre-lab quiz and the assessment of the laboratory report. Students were, however, pleased with the time allocation for practical work as well as the stipulated submission deadline for laboratory reports.

Table 1. Distribution of students' responses.

Item No	Description	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The labs contributed to my knowledge and understanding of physics	1.75	2.38	0.88	0	0
2	The labs helped to improve my lab skills and techniques	2.63	1.75	0.63	0	0
3	I see the relevance of experiment in my physics studies	2.63	2.00	0.25	0.13	0
4	The labs were interesting	3.00	1.75	0.25	0	0
5	I recommend the lab component should include a pre-lab quiz	1.38	1.13	0.88	1.00	0.63
6	Adequate help was provided during the lab session	3.38	1.25	0.38	0	0
7	The deadline for the submission of lab reports should be extended	0.50	0.63	1.25	1.88	0.75
8	The time allocated for the experiments should be extended	0.38	1.25	1.00	1.63	0.75
9	I receive constructive feedback on my lab report	1.25	1.50	0.88	1.25	0.13
10	I was marked fairly on my lab report	0.88	1.75	1.50	0.50	0.38
11	The experiment helped me connect with the theory done in class	1.00	2.75	0.88	0.38	0
12	The experiment was interesting and enjoyable	2.13	1.63	1.25	0	0
13	This experiment helped me develop my data interpretation skills	1.63	2.38	1.00	0	0

6. Conclusion

The students' views on the efficacy of the activities underpinning practical work were largely positive and this augers well for meaningful development and acquisition of an essential repertoire of practical skills necessary for successful navigation of science studies. Meaningful enhancement of scientific literacy can be realized through fostering well-structured laboratory environments characterized by provision of adequate support to students.

References

Abrahams, I. & Millar, R. (2008). Does practical work really work? A Study of the effectiveness of practical work as a teaching and learning method in school science. *Journal of Science Education*, 30(14), 1945-1969.

Bennett, J. & Kennedy, D. (2001). Practical work at the upper high school level: The evaluation of a new model of assessment. *International Journal of Science Education*, 23, 97–110.

Deacon, D & Hajek, A. (2011). Student perceptions of the value of physics laboratories. *International Journal of Science Education*, 33(7), 943-977.

Hanif, M., Sneddon, P.H., Ahmadi, F.M.A. & Reid, N. (2009). The perceptions, views and opinions of university students about physics learning during undergraduate laboratory work. *European Journal of Physics*, 30, 85-96.

Healy, P & Devane D. (2011). Methodological considerations in cohort study designs. *Nurse Researcher,* 18, 32-36.

Lave, J. (1988). *Cognition in Practice: Mind, Mathematics and Culture in Everyday Life*. Cambridge, MA: Cambridge University Press.

Leach, J. and Scott, P. (1995). The demands of learning science concepts – Issues of theory and practice. *School Science Review*, 76(277), 47–51.

Lunetta, V. N. (1998). The school science laboratory: Historical perspectives and centers for contemporary teaching. In, P. Fensham (Ed.). *Developments and Dilemmas in Science Education* (pp. 169–188). London: Falmer Press.

Lunetta, V.N., Hofstein, A. & Clough, M.P. (2007). Teaching and learning in the school science laboratory. An analysis of research, theory, and practice. In, S.K. Abell and N.G. Lederman (Eds), *Handbook of Research on Science Education* (pp. 393-431). Mahwah, NJ: Lawrence Erlbaum Associates.

Millar, R. (2004). *High School Science Laboratory: Role and Vision*. National Academy of Science, Washington, DC.

Murphy, P. & Qualter, A. (1990). *Constructing Gender - Fair Science Activities and Assessments*. Contributions- GASAT, Sweden.

Osborne, J. (1998). Science education without a laboratory. In J. Wellington (Ed.), *Practical Work in School Science Which Way Now?* (pp. 156–173). London: Routledge.

Tamir, P. and Lunetta, V. N. (1981). Inquiry related tasks in high school science laboratory handbooks. *Science Education*, 65, 477–484.

Tiberghien, A. (2000). Designing teaching situations in the secondary school. In R. Millar, J. Leach, & J. Osborne (Eds.), *Improving Science Education: The Contribution of Research* (pp. 27-47). Buckingham: Open University Press.

Vilaythong, T. (2011). *The Role of Practical Work in Physics Education in Lao PDR*. Unpublished Doctoral Thesis, Department of Physics, Umeå University, Sweden.

Wellington, J. (Ed.) (1998). *Practical Work in School Science. Which Way Now?* London: Routledge.

REFRAMING DISCIPLINE: CONNECTING WITH EVERY CHILD

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Abstract

When children feel valued, accepted and understood, they are more likely to cooperate with adults. Developing a positive relationship with an adult is a difficult task for most children, and sometimes they have no idea on how to develop those relationships. Some children have had a negative experience with an adult, which then translates into challenging behaviors for these children in the classroom. Building relationships in the classroom is essential to establish an inviting, comfortable, safe, and risk taking learning environment in the classroom. This paper will review research that provides practices that reframe discipline in the classroom. Through role-play, table discussions, and creative hands-on activities, the educator will learn to create a safe and inviting learning environment for students for both higher positive experiences and academic achievement. The literature review section identified articles that showed the positive impact of a teacher creating a positive classroom environment. Also, articles on the impact of quality teacher-child relationship were reviewed. The articles utilized were sourced from online search engines and journal databases.

Keywords: Positive classroom environment, teacher-child relationship.

1. Introduction

This section will help in exploring past studies that have been carried out on reframe discipline in the classroom and related issues that shall be explored in the study, with the aim of understanding the foundation of the current study. The purpose of the literature review is to identify studies that have been conducted in determining practices that reframe discipline in the classroom. The articles used in this section were obtained from online search engines and databases. The online search engines and databases included Google Scholar and ProQuest. The information that was obtained was related to reframing discipline where teachers connect with every child.

2. Positive classroom environment

One of the most effective way that teachers should utilize to prevent bad behaviors and encourage learning among children is by developing an engaging and positive classroom atmosphere (Conroy et al., 2009). According to the authors, how a teacher responds to a good and bad behavior from the students can aid in setting the tone of the classroom environment. The authors indicate that the most efficient way of building a positive classroom environment is by developing a positive relationship between the teacher and the student. According to the authors, two significant forms of teacher attention can be utilized to aid in promoting positive teacher-student relationships, which include feedback and teacher praise. Despite the fact that most teachers make use of the instructional tools on their students, the authors found out that they are not being used efficiently or frequently. The authors concluded that teachers can make use of feedback and praise to impact on their relationship with the students, and also improve the environment of the classroom.

MacSuga-Gage, Simonsen & Briere (2012) indicate that efficient teaching is both a science and an art. The most successful teachers combine social, behavioral, and academic threads to attain a unique classroom environment. The authors researched with the aim of presenting a framework that helps in organizing tangible efficient teaching practices, and also highlighting certain strategies that teachers should utilize in promoting and establishing a positive classroom environment. The authors focused on three crucial areas of efficient teaching which include building relationship with students, employing empirically supported classroom management approaches, and delivering engaging and explicit academic

instruction. According to the authors, efficient teachers should consistently strive to promote appropriate behaviors, academic achievement, and building a positive relationship with their students.

3. Impact of teacher-child relationship

The teacher-child relationship is very significant for children ("Positive Teacher-Student Relationship," n.d.). Normally, children spend most of their time, approximately 5 to 7 hours, of a day with a teacher for nearly ten months. A positive association between the teacher and the child is hard to establish but can be created. A teacher and child who have respect in the classroom and qualities of good communication can develop a positive association in the classroom. Every child has different methods of learning and attaining their goals. A few students are fast learners, while others need to be taught repeatedly using diverse techniques for them to understand. Teachers need to closely monitor every child to identify the challenges being faced by the child. Being able to identify the child's confusion, fear or problem enables the teacher to understand better the learning difficulties being faced by the child. The teacher is patient with child after identifying the problem, hence making the child to feel less confused or secure when learning is continuing in the classroom ("Positive Teacher-Student Relationship," n.d.).

O'Connor, Dearing & Collins (2011) conducted a study with the aim of examining the relationship between quality of teacher-student relationships and behavior problems among children. The authors conducted the study using data obtained during a study conducted on early child care and youth development by NICHD. According to the results obtained by the authors, high quality relationship between the teacher and the child indicated low possibilities of externalizing behaviors. Also, the authors identified that high quality association played as positive factors, which helped in preventing children who had high rates of internalizing problems in their early childhood. The authors concluded that teacher-child relationship can be used as an intervention to aid in preventing behavior challenges in middle childhood.

According to O'Connor & McCartney (2007), there is a relationship that exists between quality teacher-child association and child's achievement. The authors conducted a study with the aim of examining the correlation between quality teacher-child relationships and the student's achievement. The authors conducted the study using 1364 children. According to the results, there was a significant association identified between quality teacher-child association and achievement. The authors identified that quality teacher-child association shielded the students from negative impacts of insecure or other attachments that prevented the students from achieving. Also, the impact of quality teacher-child associations on achievement was facilitated through teacher and child behaviors in the classroom. The authors concluded that quality teacher-child relationships helped in fostering the student's achievement.

Roorda et al. (2011) conducted a study using a meta-analytic approach with the aim of investigating the relationship between quality teacher-child relationship and the child's school achievement and engagement. The results obtained during the study were based on ninety-nine studies. The authors conducted studies for both positive and negative relationships, and achievement and engagement. According to the results, there was a significant difference the association between both negative and positive relationships with engagement and achievement. The authors concluded that there was a higher association between quality teacher-child relationship and child's school achievement and engagement.

Children well known for having significant behavior problems are at a great risk for several deleterious school outcomes and poor school adaptation (Baker, Grant & Morlock, 2008). According to Baker, Grant & Morlock (2008), given the time in which students spend in school, there a great need to comprehend the normative processes and contexts that are within the school that can be employed to improve the positive adaptation of students with crucial behavior problems. The authors conducted a study with the aim of evaluating teacher-child relationship, precisely, the degree of conflict and closeness in the relationship. According to the results, the quality of the teacher-child association predicted the student's successful school adjustment. A teacher-child relationship that is categorized by low degrees of conflict, trust, and warmth was linked with positive school outcomes. The authors concluded that a quality teacher-child relationship had a positive impact on the child's outcomes in school.

According to Bondy et al. (2007), for teachers to create a safe and productive environments for students from diverse population, they need more than the processes recommended by the original literatures on classroom management. The authors base their research on three efficient novice teachers on the practices that they utilized during their first two hours of their first day in school. The authors employed an inductive approach to analyze interview and videotape data. According to the authors, the teachers aimed at establishing relationships and developing expectations by making use of culturally and persistence responsive communication style. The study aimed to create a vivid picture on ways that teachers adopt in teaching and insisting on respectful behavior and develop a caring, task-focused

community. Also, the study indicates how teachers develop an environment of resilience and success for students who had a history of discipline in school.

4. Conclusion

The articles synthesized above showed the significance of a teacher establishing a positive relationship with their students. Several studies indicate that one of the most effective way that teachers should utilize to prevent bad behaviors and encourage learning among children is by developing an engaging and positive classroom atmosphere. Also, the synthesis of the literature indicate that the teacher-child relationship is very significant for children. The synthesis of the literature helped in identifying literature gap. There are few literature on teacher connecting with every child which justified the need for this study.

References

Baker, J. A., Grant, S., & Morlock, L. (2008). The teacher-student relationship as a developmental context for children with internalizing or externalizing behavior problems. *School psychology quarterly*, *23*(1), 3.

Bondy, E., Ross, D. D., Gallingane, C., & Hambacher, E. (2007). Creating environments of success and resilience: Culturally responsive classroom management and more. *Urban education*, *42*(4), 326-348.

Conroy, M. A., Sutherland, K. S., Snyder, A., Al-Hendawi, M., & Vo, A. (2009). Creating a Positive Classroom Atmosphere: Teachers' Use of Effective Praise and Feedback. *Beyond Behavior*, *18*(2), 18-26.

MacSuga-Gage, A. S., Simonsen, B., & Briere, D. E. (2012). Effective Teaching Practices: Effective Teaching Practices that Promote a Positive Classroom Environment. *Beyond Behavior*, *22*(1), 14-22.

O'Connor, E. E., Dearing, E., & Collins, B. A. (2011). Teacher-child relationship and behavior problem trajectories in elementary school. *American Educational Research Journal*, *48*(1), 120-162.

O'Connor, E., & McCartney, K. (2007). Examining teacher–child relationships and achievement as part of an ecological model of development. *American Educational Research Journal*, *44*(2), 340-369.

Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of educational research*, *81*(4), 493-529.

The Positive Teacher-Student Relationship. (n.d.). Retrieved from https://www.csun.edu/~acc50786/Education.html

SOUTH AFRICAN SCIENCE STUDENTS' SELF-EFFICACY BELIEFS – A CASE OF PHYSICS LEARNING

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Abstract

This study examined science students' self-efficacy beliefs at a South African university in relation to physics learning as learning is a dynamic process underpinned by a myriad of pedagogic factors. The significance of self-efficacy beliefs stems from their impact on motivational and self-regulation processes. In view of this key imperative, students' self-efficacy beliefs were established through the administration of the Survey of Self-Efficacy in Science Courses – Physics (SOSESC-P) questionnaire. Questionnaire items are categorized according to four key dimensions in the form of Mastery Experiences, Vicarious Learning, Social Persuasion and Physiological State. The students constituted a purposive sample within the context of this inquiry. Analysis of data demonstrated that students' self-efficacy beliefs appeared to be characterized by varied and fragmented views in terms of the four key dimensions specified. The theoretical implications for effective teaching and learning are discussed.

Keywords: Self-efficacy beliefs, physics learning, motivational and self-regulation processes.

1. Introduction

The need for students to realise their full potential and self–actualisation is paramount. It is a known fact that student academic performance in particular is influenced by a myriad of factors associated with the dynamic nature of the instructional setting. The impact of these factors hinges on self-efficacy beliefs as an integral part of motivational and self-regulation processes. Self-efficacy is an essential construct of social cognitive theory (Bandura, 1986). Perceived self-efficacy is defined as beliefs in one's capabilities to organize and execute courses of action required to produce given attainments (Bandura, 1997). Research in science education has largely focused on cognition with little consideration of affective constructs and its relationship with academic performance (Fortus & Vedder-Weiss, 2014; Koballa & Glynn, 2007). There is thus a need to turn attention to affective constructs such as student motivation, goal orientation and self-efficacy (Schunk, Pintrich, & Meece, 2008) with a view to address a dearth of research investigating affective factors related to science education (Fortus & Daphna, 2017; Gungor, Eryilmaz, & Fakioglu, 2007). Within the broader South African context, student affective constructs such as self-efficacy have been under-researched (Harry & Coetzee, 2011; Sofowora, 2014). It is against this background that this inquiry explored university science students' self-efficacy beliefs in relation to physics learning.

2. Self-efficacy and its characteristics

According to Bandura (1986), self-efficacy refers to individuals' beliefs in their capability to accomplish a specific task. Self-efficacy is underpinned by the theoretical position that asserts that individuals are self-regulating and will monitor and regulate their behaviour (Bandura, 1982). Jones and Leagon (2014) assert that self-efficacy is part of an individual's belief system and is influenced by prior experiences, successes, and failures. Self-efficacy is not necessarily related to the skills individuals actually possess, but how they perceive their own capabilities for a specific task (Mataka & Kowalske, 2015). The implication of this notion is that people with higher self-efficacy beliefs are more likely to attempt difficult tasks than those who have low self-efficacy beliefs (Fairbrother, 2000). Bandura (1986, 1997) postulated four sources of self-efficacy. The sources are mastery experiences, vicarious experiences, social persuasion as well as emotional and psychological states. Mastery experiences have the greatest impact on student self-efficacy. Vicarious experiences are related to the observation of role models such as teachers, parents, peers or characters students can identify with. Social persuasion can

influence students positively and make them work harder towards achieving desired outcomes in science. Emotional and psychological states refer to the anxiety and stress that a person faces when performing a given task. As a key construct, self-efficacy is context and task dependent (Bong, 2006; Pajares, 1996) which implies that self-efficacy is therefore domain-specific. This inquiry takes cognizance of the domain-specificity of self-efficacy and is primarily focused on science students' self-efficacy beliefs within the context of physics learning.

3. Research design and methodology

The sample in this inquiry was comprised of first year university science students taking physics as one of their modules (*N = 80*) at a South African university. Data was collected by administering the *Survey of Self-Efficacy in Science Courses – Physics (SOSESC-P)* questionnaire consisting of items about self-efficacy beliefs. The instrument used for collecting data was a likert questionnaire consisting of 33 items. The items were statements to which students had to respond on a 5-point rating scale that ranged from 1(very poorly) to 5 (very well). Questionnaire items are categorized according to the four dimensions in the form of Mastery Experiences, Vicarious Learning, Social Persuasion and Physiological State. Each dimension was characterized by the following focus areas: attainment, understanding, attention, test-taking, recall and recognition. The questionnaire items were clustered according to the specified focus areas and the mean score for each focus area was calculated based on the relevant cluster of items. The instrument was administered to students at the end of the first semester before the commencement of the summative assessment. The cohort of students constituted a purposive sample within the context of this inquiry.

4. Results and discussion

Table 1 below provides mean scores for focus areas associated with various dimensions.

Table 1. Mean scores for focus areas associated with various dimensions.

	Mastery Experiences	Vicarious Learning	Social Persuasion	Physiological State
Attainment	2.98	3.0	3.1	2.8
Understanding	3.1	3.2	2.7	2.9
Attention	3.1	3.1	3.3	3.1
Test-taking	2.8	2.9	3.3	3.1
Recall and recognition	3.2	3.3	2.9	3.2

In terms of mastery experiences, students appeared to lack sustained commitment and confidence to solve physics problems and this appeared to have a significant bearing on their attitude to assessment. This finding is corroborated by the mean values for test-taking in relation to mastery experiences and vicarious learning. This is further accentuated by the item "*When I came across a tough physics question, I worked at it until I solved it* " which had a mean score of 2.6. While students indicated that they could remember the basic physics concepts taught in class, a meaningful application of acquired conceptual understanding to problem solving appeared to be a fundamental challenge. Research shows that highly efficacious students tend to expect high academic performance (Bandura, 1986). In addition, when variation in efficacy beliefs is controlled, outcome expectations do not account for significant proportion of academic performance (Lent, Lopez & Bieschke (1993). Difficulties encountered with problem solving may be attributed to the explanations provided by the instructor. This is captured by the item *"My instructor's demonstrations and explanations gave me confidence that I could solve physics-related problems"* which had a mean score of 2.8. The mean scores of other items strongly suggest that the instructional setting could hardly provide a supportive environment geared towards fostering meaningful learning. It has been established that the significance of self-efficacy perception towards physics lectures is an indicator of student academic achievement (Capri & Celikkaleli, 2008; Karakoyun & Kavak, 2008).

Recall and recognition as well as understanding appeared to be areas of concern in relation to social persuasion. Students' responses pointed to the lack of positive instructional climate that ought to promote meaningful learning through the enhancement of motivational and self-regulation processes. This assertion is consistent with students' responses to the item, *"I got positive feedback about my ability to recall physics ideas"* which had a mean score of 2.9. Research shows that self-efficacy changes depend on student's alma mater (Kurt & Ekici, 2012). It has also been established that students from private schools perform well in physics due to the fact that private schools have more resources as compared to public schools (Macabebe, Culaba & Maquiling, 2010). The mean values of the items related to the physiological state suggested that laboratory activities could hardly provide rich learning experiences. Attainment and understanding were problematic key focus areas in relation to the physiological state. Students were particularly concerned about their ability to solve problems and this area appeared to be an overriding narrative in terms of the identified sources of perceived self-efficacy. However, there is a meaningful difference in self-efficacy in terms of learning levels (Maskan, 2010). Furthermore, the program under which students are educated creates a difference in self-efficacy (Capri & Celikkaleli, 2008). Instructors are faced with the inevitable key imperative to develop high levels of self-efficacy on the part of students in order to ensure effective learning. Inculcation of high levels of self-efficacy would potentially facilitate meaningful achievement of appropriate performance outcomes.

5. Conclusion

This inquiry revealed that problem solving ability was largely perceived by the students as a key requirement for the realization of perceived self-efficacy. Positive instructional climate that promotes meaningful learning ought to be fostered to enhance motivational and self-regulation processes. Perceived self-efficacy remains a key construct that should potentially underpin the improvement of instruction and effective learning.

References

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122-147.

Bandura, A. (1986) *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York: W. H. Freeman and Company.

Bong, M. (2006). Asking the right question: How confident are you that you could successfully perform these tasks? In F. Pajares & T. Urdan (Eds.), *Self-Efficacy Beliefs of Adolescents* (pp. 287–305). Greenwich, CT: Information Age Publishing.

Capri B Celikkaleli Ö 2008 Analysis of prospective teachers' attitudes and professional efficacy beliefs towards teaching according to their gender, programme and faculty *Inö. Univ. J. of Fac. of Educ.* 9 33-53.

Fairbrother, R. (2000). Strategies for learning. In M. Monk & J. Osborne (Eds.). *Good Practice in Science Teaching. What Research Has To Say* (pp. 7-24). Philadelphia, PA: Open University Press, 7-24.

Fortus, D & Vedder-Weiss, D (2014). Measuring Students' Continuing Motivation for Science Learning. *Journal of Research in Science Teaching, 51*, 497-522.

Fortus, D & Daphna, L (2017). Adolescents' goal orientations for science in single-gender Israeli religious schools. *International Journal of Science Education, 39*, 86-103.

Gungor, A., Eryilmaz, A. & Fakioglu, T. (2007). The relationship of freshmen's physics achievement and their related affective characteristics. *Journal of Research in Science Teaching, 44*(8), 1036-1056.

Harry, N. & Coetzee, M. (2011). Sense of coherence, affective wellbeing and burnout in a South African higher education institution call centre. *South African Journal of Labour Relations, 35*(2), 26-46.

Jones, M. G., & Leagon, M. (2014). Science Teacher Attitudes and Beliefs. In N. G. Lederman & S. K. bell (Eds.), *Handbook of Research on Science Education Volume II* (pp.830-847). New York, NY: Routledge.

Karakoyun, F., Kavak, M.Y. (2008). Advantage of web survey and the application of web survey to the physics attitude scale as an example of practice. *Dic. Univ. J. of Ziy. Gök. Fac. of Educ.,* 11, 129-141.

Koballa, T. R., & Glynn, S. M. (2007). Attitudinal and motivational constructs in science learning. In S. K. Abell & N. G. Lederman (Eds.), *Handbook of Research on Science Education* (pp. 379–382). Mahwah, NJ: Lawrence Erlbaum Associates

Lent, R.W., Lopez, F.G. & Bieschke, K.J. (1993). Predicting mathematics-related choice and success behaviors: Test of an expanded social cognitive model *Journal of Vocational Behaviour,* 42 223–236.

Macabebe, E.Q.B, Culaba, I.B, Maquiling, J.T. (2010). Preconceptions of Newton's Laws of motion of students in introductory physics *International Conference on Physics Education (ICPE), 2009,* Vol 1263 No 1, pp. 106-109 (AIP Publishing).

Maskan, A. (2010). Assessment of the self-efficacy beliefs of prospective physics and mathematics teachers towards physics. *Ulu. Univ. J. of Fac. of Educ,* 23, 31-42.

Mataka, L.M. & Kowalske, M.G. (2015). The influence of PBL on students' self-efficacy beliefs in chemistry. *Chemistry Education Research and Practice, 16*(4), 929-938.

Pajares, F. (1996). Self-efficacy Beliefs in Academic Settings. *Review of Educational Research, 66*(4), 543-578.

Schunk, D.H., Pintrich, P.R., & Meece, J.L. (2008). *Motivation in Education: Theory, Research and Application.* Upper Saddle River, New Jersey and Columbus, Ohio: Pearson.

Sofowora, S. O. (2014). *Anxiety and Lack of Motivation as Factors Affecting Success Rates in Bridging Mathematics.* Unpublished dissertation. University of South Africa, Pretoria

INTERPERSONAL FUNCTIONING IN FUTURE PRESCHOOL SPANISH TEACHER

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Abstract

Attachment is an emotional bond between children and their caretakers. For infants and toddlers, the primary attachment figure is usually their parents. This bond develops with the continuous interaction between the child and the caregiver. The early entry of children into school has caused the teacher to become an attachment figure for many children.
A child's attachment style in the classroom is dependent on the behavior their teacher shows towards them, promoting or not an adequate integral development of the students. At the same time, teacher-child interaction quality is influenced by teacher's attachment style. Secure attachment has been shown to positively influence a child´s development as well as later successful academic performance.
This study examines the attachment style in 80 future preschool teachers. They are currently enrolled in a Degree in infant education in the Faculty of Education in the University of Zaragoza (Spain). The students filled in "Questionnaire for the assessment of adult attachment" (Melero y Cantero, 2008). This questionnaire combines the scores obtained in four scales (1.-"Low self-esteem, need for approval and fear of rejection"; 2.-"Hostile conflict resolution, resentment and possessiveness"; 3.-"Expression of Feelings and Comfort with Relationships"; 4- "Emotional Self-Sufficiency and Discomfort with Intimacy") in order to obtain four adult attachment styles: secure attachment and three insecure attachment typologies ("hostile fearful", "anxious", and "dismissing").
Main results indicate that: 1) No participant shows a secure attachment; 2) almost half the sample (46.25%) score low or very low in scale number 3. It shows difficulties in interpersonal functioning.
These findings support interventions to promote the ability to express emotions and sociability in future preschool teachers in order to reduce the need for approval and the fear of rejection as well as the need of individuality and emotional self-sufficiency, developing useful conflict resolution strategies. These interventions will promote a secure attachment in future teachers, an enhancing factor for an adequate development of the students.

Keywords: Attachment, infant-teacher relationship, early infant development.

1. Introduction

Lafuente (1989) defines Attachment as an emotional bond, intense and durable between two people. This bond develops with the continuous interaction between them. The goal is looking for attachment figure proximity to obtain care and protection necessary for fisical and psychological well-being. Establishment of attachment, at least with a person, is the stronger need throughout life for a human. This will allow the person to develop in personal and social health. It was known by everyone human develop our skills and capabilities better when we have reliable people we turn to in case of troubles. A child's initial dependence on others for protection provides the experiences and skills to help a child cope with frustrations, develop self-confidence and pro-social relationships. The nature of a child's primary attachments to caregivers lay the foundations for socioemotional well-being. This is why attachment figure is especially important during child stage (Cantero, 2010).

Mother usually has been primary child´s caregiver so she has been primary attachment figure too. Children, from the beginning, can establish one or more attachment figures simultaneously (Ainsworth, 1989). After, when child increase their cognitive, social and emotional competences, it is frequent to have a hierarchy of different attachment figures.

Ainsworth (1989) suggested two criteria that an attachment relationship may involves: it should be a long-lasting affectional bond and to provide specific cares and attention in stressing situations obtaining an experience of security and comfort. In this sense, several works point out the importance that

educators themselves need to establish an attachment-like relationship with their pupils (Geddes, 2010; Pianta & Stuhlman, 2004), particularly during first years of school in order to enhance an holistic development. These works indicate that a teacher which is attachment aware will have at least the following characteristics: 1) To be sensitive to the needs of each child; 2) To accept the particularities of each child, their abilities and limitations; 3) Cooperate with him, always keeping in mind the state and activity of the child; 4) To be accessible and available whenever the child needs it, and 5) To be emotionally expressive. Attachment influences students' school success. Secure attachment is associated with greater emotional regulation, social competence, and willingness to take on challenges, each of which in turn is associated with higher achievement. That's way Preschool teacher must pay attention to socio-personal characteristics of each one students in order to achieve an integral development of them. Attachment experience is an important factor in preparing children to learn. Secure attachment is crucial to children's psychological welfare and forms the basis of personality development and socialization. Research on attachment suggests that these skills of sensitive teacher seem to have influence by their own attachment style. Secure attachment relationships correlate strongly with higher academic attainment, better self-regulation and social competence.

2. Objective

The objective in this research is to analyze the style of attachment in 80 future preschool teachers in the Faculty of Education in the University of Zaragoza (Spain). Research shows that teachers´ style of attachment affect in their ability to become or not an attachment figure to their students. It has several implications for students´ learning and behavior.

3. Method

3.1. Participants

The participants of this study are future teachers, they are still in training. Therefore, if we found an attachment style that doesn´t promote a secure attached children, we will be able to design and implement an intervention before the future teachers start their educational work in order to modify their attachment style. Indirectly, we are enhancing an optimal child development.

3.2. Instrument and procedure

The students filled in "Questionnaire for the assessment of adult attachment" (Melero y Cantero, 2008). This questionnaire combines the scores obtained in four factors:

1.- "Low self-esteem, need for approval and fear of rejection". 13 items relate to a negative model of himself with problems of behavioral and emotional inhibition.

2.- "Hostile conflict resolution, resentment and possessiveness".11 items relate to the dysfunctional management of anger that characterizes the insecurity

3.-"Expression of Feelings and Comfort with Relationships". 9 items refer to the fluidity that characterizes a good emotional functioning. These are items related to sociability, bilateral conflict resolution strategies and confidence

4- "Emotional Self-Sufficiency and Discomfort with Intimacy". 7 items highlight self-sufficiency to whom hasn't gone well in their relationships thus, they devalue intimacy 1, 2 and 4 factors asses aspects related to affective insecurity. The third is related to security.

The combination of these factors classifie subjects in four affective styles:

1.- Hostile fearful attachment: This type of attachment is typical of people who are characterized by anger, hostility, resentment and possessiveness perhaps due to covert anger and unresolved conflicts towards their attachment figures.

2.- Anxious attachment: They show low self-esteem, need for approval and fear of rejection, although they show an adequate emotional expressiveness and comfort in relationships.

3.- Secure attachment: They are social people, ease to express feelings and with bilateral conflict resolution strategies

4.- Dismissing attachment: This style of attachment is characterized, mainly, by a high need for individuality, prioritizing self-sufficiency in the establishment of affective ties. They are people who refuse emotional commitment but who do not have problems of self-esteem or insecurity.

4. Results

Table 1 shows that most people in the sample scores moderate in factor 1.- "Low self-esteem, need for approval and fear of rejection" and in factor 2.- "Hostile conflict resolution, resentment and possessiveness", the sample mostly scores moderate.

In Factor number 3.- "Expression of Feelings and Comfort with Relationships", predominates low/moderate and very low scores.

In Factor 4.- "Emotional Self-Sufficiency and Discomfort with Intimacy", the sample score moderate/high.

*Table 1. Percentage of participants that obtain each qualitative value in each factor.*

	Very low	Low	Low/Moderate	Moderate	Moderate/High	High	Very high
Factor 1	8,75	2,50	11,25	38,75	18,75	11,25	8,75
Factor 2	8,75	7,50	12,50	31,25	13,75	12,50	13,75
Factor 3	26,25	20	31,25	16,25	5	1,25	0
Factor 4	1,25	0,00	12,50	12,50	37,50	15,00	21,25

We highlight results in factor 3: "Expression of Feelings and Comfort with Relationships". This factor reflects fluidity in an interpersonal relationship and emotional security. There are items about sociability, ease to express emotion, bilateral strategies to solve conflicts and confidence to share issues. In this factor sample obtains the lowest score: 31,25% of the participants get a low/moderate score; 26,25% score very low and 20% score low. Almost all the participants refer a lack in this factor related to an adequate interpersonal relationships and emotional security. Only a few 6,25% of the participants show normal levels and no participant scored very high in this factor.

Therefore, these data show that preschool future teachers have an important lack in interpersonal functioning.

According to qualitative value obtained by each one participant in each factor, results show only 2,5% of the participants correspond with any style of attachment according to the questionnaire (Figure 1). Specifically, this 2,5% of the participants show an hostile fearful attachment. This attachment is characterized by: low self-esteem, fear of rejection, problems of behavioral and emotional inhibition, tendency to anger, rancor, hostility and possessiveness, poor sociability, difficulty to express feelings, high need for individuality, priority of the autonomy against the establishment of affective ties and avoidance of emotional commitment.

Figure 1. Percentage of participants with an attachment style identified in the questionnaire.
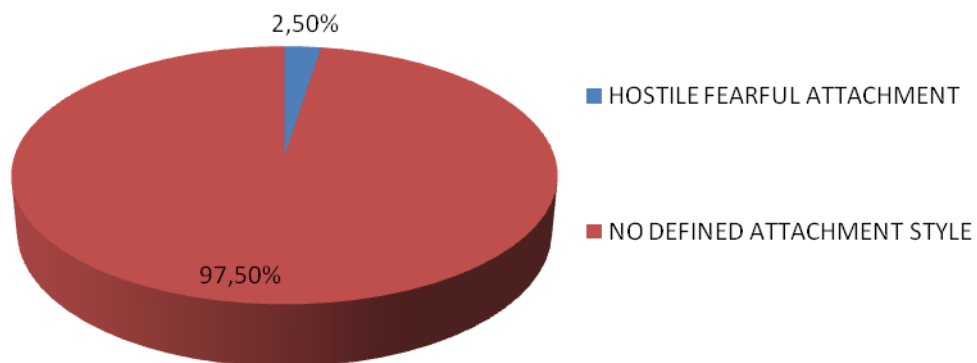
In order to obtain another typologies of attachment, clusters analyses were made. Results showed 3 groups of different size and scores (Figure 2):

Group1 (76,25% of the participants): They score moderate in factors 1 y 2, low in factor 3 and moderate/high in factor 4.

Group 2 (11,25% of the participants): They get the highest scores in factor 1 y 2, very low/low in factor 3 and moderate/high in factor 4.

Group 3 (12,5% of the participants): They get the lowest scores in factors 1, 2 and 3 and they score moderate in factor 4.

Factor 1 (low self- esteem, need for approval and fear of rejection) and factor 2 (Hostile resolution of conflict, resentment and possessiveness) are the most different between groups. All groups score low or very low in factor 3 and moderate/high in factor 4.

Figure 2. Typologies according to detecting factors in Questionnaire for the assessment of adult attachment (Melero y Cantero, 2008).
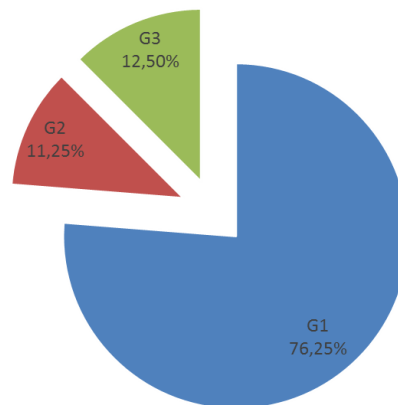
5. Discussion

Scientific literature confirms that personal attachment histories of teachers and their representational models about themselves and others determines the attachment quality with their students. It is therefore imperative teachers to be aware of the importance of their own style of attachment since this directly influences the integral development of their students.

This issue is especially important in our sample because the results show that no participants have a secure attachment (the most appropriate attachment to achieve an integral development). Almost every participant shows a lack in a fluid interpersonal functioning (factor 3 in the questionnaire: Expression of Feelings and Comfort with Relationships).

According to the results, the objectives of the intervention should be focused on: 1) To increase their ability to express their emotions and sociability; 2) To decrease the need for approval and fear of rejection; 3) To diminish the need for individuality and emotional self-sufficiency; and 4) To develop bilateral conflict resolution strategies. We don´t forget that only an affective school is an effective school.

References

Ainsworth, M. D. (1989). Attachments beyond infancy. *American Psychologist*, *44*, 709-716.

Cantero, M. J. (2010). Calidad del vínculo de apego en la infancia. In M. J. Lafuente & M. J. Cantero (Eds.), *Vinculaciones afectivas. Apego, amistad y amor* (pp. 127-166). Madrid: Pirámide.

Geddes, H. (2010). *El apego en el aula. Relación entre las primeras experiencias infantiles, el bienestar emocional y el rendimiento escolar*. Barcelona: Grao.

Lafuente, M. J. (1989). Hacia una conceptualización del apego. *Revista de Psicología de la Educación*, *1*, 45-55.

Melero, R. & Cantero, M. J. (2008). Los estilos afectivos en la población española: un cuestionario de evaluación del apego adulto. *Clínica y Salud*, *19*, 83-100.

Pianta, R. C. & Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychology Review, 33*, 444-458.

WORK ETHIC OF SOUTH KOREANS FOR LEVELS OF EDUCATION, OCCUPATION, AND EMPLOYMENT STATUS

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Abstract

This study focuses on demographic differences in selected work ethic attributes of South Koreans as measured by the Korean Employability Skills Assessment (KESA). The four factors of the KESA which were *initiative, interpersonal skills, thoughtfulness, and dependability* were compared for levels of education, occupation, and employment status. A total of 941 Korean adults who were 18 years old and above provided usable data. Descriptive statistics, one-way ANOVA with post hoc tests were employed to analyze data collected. Findings suggest that there are statistically significant differences in *initiative, interpersonal skills, thoughtfulness, and dependability* based on education levels; there are statistically significant differences in initiative based on occupations; and there are statistically significant differences in initiative based on employment status. Implications and suggestions for further studies are discussed.

Keywords: Korean employability skills assessment, Korean work ethic, employability skills, one-way ANOVA.

1. Introduction

Doing a good job at work is considered good work ethic needed for success in the contemporary globalized world (Rojewski & Hill, 2014; Park & Hill, 2016). Employers seek workers with strong work ethics (Park & Hill, 2016). Work ethic can be defined as "a cultural norm that advocates being personally accountable and responsible for the work that one does and is based on a belief that work has intrinsic value" (Hill & Petty, 1995, p. 60). Attitudes and behaviors toward work are learned and developed by watching and modeling others such as parents, teachers, friends, colleagues, and bosses during one's lifetime as Bandura describes learning occurs by observing and modeling others (Park & Hill, 2016). In South Korea, strong work ethic is emphasized to be educated and developed among students, job seekers, and employees because there have been many man-made disasters which are caused because of lack of work ethic for the last several decades. Many research studies on work ethic have been conducted in the western countries such as the U.S. (e.g., Blau & Ryan, 1997; Blood, 1969; Goldstein & Eichhorn, 1961; Miller, Woehr, & Hudspeth, 2002; Ray, 1982; Wollack, Goodale, Wijting, & Smith, 1971) since Weber (2005) proposed that the Protestant ethic enhanced the economic growth in the U.S. However, few studies on work ethic in South Korea were done (e.g., Kim, 2007), scientific empirical studies on work ethic in South Korea are still sparse. As such this study was to describe and compare South Korean work ethics for levels of education, different occupations, and employment status to provide a basis for research and learning in South Korea.

2. Objectives

The main objective of the current study was to compare work ethic of South Koreans as measured by a Korean translation of the Employability Skills Assessment (KESA). *Initiative, interpersonal skills, thoughtfulness, and dependability* which are the four dimensions of the KESA were compared for education level, occupation, and employment status.

3. Methods

An ex-post facto research design using a cross-sectional survey was employed for this study. After IRB for the study was approved, 23 initial contact persons were selected who were from 11 different occupational categories based on the 2007 Korean Standard Classification of Occupation.

The initial contact persons distributed an online link to a package of a questionnaire with a cover letter, demographic questions and the KESA questions via email to potential participants using a convenient snowballing sampling process. They distributed the link 1592 individuals and 946 Korean workers participated in the study. Thus, the response rate was 60.56%.

3.1. Participants

The population for this study consisted of Korean workers who were 18 years old or above. Female respondents were 427 (47.7%). Respondents had different education levels from middle school to doctorate: 17 (1.9%) finished middle-school, 174 (19.4%) obtained high-school diplomas, 115 (12.8%) completed junior-college, 337 (37.6%) had bachelor's degrees, 189 (21.1%) finished master's degrees, and 64 (7.1%) had doctorate degrees. Considering the employment status of respondents, 435 (48.5%) were employed as full-time, 131 (14.6%) were part-time employees, 169 (18.9%) were self-employed, and 161 (18.0%) were not employed at the time of the study. Participants were from various occupations: 99 (11.0%) were managers, 278 (31.0%) were professionals (31.0%), 115 (12.8%) were clerks, 77 (8.6%) were service-workers, 69 (7.7%) were sales-workers, 13 (1.5%) were skilled-agricultural-forestry, 43 (4.8%) were craft-trades-workers, 17 (1.9%) were machine-operating, 64 (7.1%) were elementary-workers, 39 (4.3%) were armed-forces, and 82 (9.2%) were in work situations that did not align with any of these categories.

3.2. Instrumentation

To assess work ethics of Korean workers, the Korean Employability Skills Assessment (KESA) was used. The original ESA was developed in 1995 for students, trainees, or adults to measure their own work ethic and attributes toward work (Park & Hill, 2016) and the KESA is a Korean version of the ESA. The KESA has 23 brief questions (e.g., Are you committed to doing good work and is comprised of four factors: initiative (α =.80), interpersonal skills (α = .77), thoughtfulness (α = .72), and dependability (α = .68). The KESA is self-reporting and uses a seven-point Likert scale (1 = never, 2 = almost never, 3 = seldom, 4 = sometimes, 5 = usually, 6 = almost always, and 7 = always). *Initiative* consists of eight items and represented work ethic attributes of taking initiative, such as accomplishing goals and completing the work that must be done. Interpersonal skills with four items reflect work ethic characteristics that support good relationships among people, such as working well with others. Thoughtfulness includes four items and represents work ethic attributes, such as being conscious of others, having good manners, and carefulness at work. Dependability consists of four items and describes work behaviors such as following instructions and telling the truth.

3.3. Data analysis

To describe the work ethics of South Korean workers, descriptive statistics including means and standard deviations (*SD*) were calculated. The four dimensions of the KESA were set as the dependent variables. Independent variables were level of education, occupations, and employment status. To determine if a statistically significant difference existed for the work ethics of South Korean workers based on levels of education, occupation, and employment status, one-way analysis of variance (ANOVA) was performed. Several one-way ANOVAs were needed to examine the four independent variables for the four factors of the KESA. One-way ANOVA is appropriate when comparing several means on the same data to control Type I error rate inflated (Johnson & Christensen, 2004). A .05 level of significance was selected for use on each of the ANOVAs run in this study. First, Levene's test was employed to test whether the variances of the different groups are significantly different. Next, the F-ratio was calculated to see if there are significant mean differences between groups. Since independent variables had more than two categories (level of education, occupation, and employment status). Both Bonferroni and Scheffe post hoc tests were used to provide all pairwise comparisons. The Scheffe post hoc test is usually recommended when the sample size of each group is different. The Bonferroni test is for controlling the familywise error. To make inferences about the practical significance of the results, effect sizes were calculated.

4. Findings

The first research objective was to determine if the work ethics differ among South Korean workers grouped by level of education. Six levels of education were included: (1) completed middle school, (2) complete high school or GED, (3) two-year college or Associate's degree, (4) Bachelor's degree, (5) some graduate degree, and (6) Doctorate. Out of 941 respondents, 15 workers completed

middle school (1.60%), 180 held a high school degree or GED (19.13%), 119 held 2 years of college or Associate's degree (12.65%), 344 held Bachelor's degree (36.56%), 211 participants held some graduate degree (22.42%), and 72 respondents (7.65%) completed a doctorate degree. ANOVA procedures showed as significant difference in the work ethics, as measured by the KESA, among Korean workers categorized by level of education. One-way ANOVA tests produced significant F-values at the .05 level for initiative with $F(5, 935) = 12.09$, $p < .05$, $r = .25$; interpersonal skills with $F(5, 935) = 2.39$, $p < .05$, $r = .11$; thoughtfulness with $F(5, 935) = 8.17$, $p < .05$, $r = .002$; dependability $F(5, 935) = 6.61$, $p < .05$, $r = .18$. For six different levels of level of education, Both Bonferroni and Scheffe post hoc tests were performed. For initiative, respondents who had some graduate degree ($M = 5.55$, $SD = 0.71$) and doctorate degree ($M = 5.84$, $SD = 0.59$) scored significantly higher than those who completed middle school ($M = 4.87$, $SD = 0.77$) and high school or GED ($M = 5.24$, $SD = 0.69$). Also, respondents who had doctorate degree ($M = 5.84$, $SD = 0.59$) showed significantly higher scores than those who had two-year college ($M = 5.29$, $SD = 0.79$) and bachelor's degree ($M = 5.36$, $SD = 0.67$). However, there were not significant differences among other groups. For interpersonal skills, Both Bonferroni and Scheffe post hoc tests did not show statistically significant differences among different levels of education. For thoughtfulness, Both Bonferroni and Scheffe post hoc tests suggested that, respondents who had doctorate degree ($M = 2.59$, $SD = 0.33$) scored significantly higher than those who completed middle school ($M = 2.16$, $SD = 0.51$), high school or GED ($M = 2.33$, $SD = 0.38$), two-year college ($M = 2.39$, $SD = 0.38$), and bachelor's degree ($M = 2.43$, $SD = 0.36$). Respondents with some graduate degree ($M = 2.50$, $SD = 0.36$) showed a statistically significant higher score than those who completed middle school ($M = 2.16$, $SD = 0.51$) and high school or GED ($M = 2.33$, $SD = 0.38$). There were no significant differences between some graduate degree ($M = 2.50$, $SD = 0.36$) and doctorate degree ($M = 2.59$, $SD = 0.33$). For dependability, Both Bonferroni and Scheffe post hoc tests suggested that respondents with doctorate degree ($M = 2.61$, $SD = 0.31$) scored significantly higher than those who completed middle school ($M = 2.26$, $SD = 0.34$), high school or GED ($M = 2.45$, $SD = 0.33$), two-year college ($M = 2.43$, $SD = 0.40$), and bachelor's degree ($M = 2.47$, $SD = 0.34$) except for some graduate degree ($M = 2.56$, $SD = 0.32$). Respondents with some graduate degree did not show statistically significant differences among other groups.

The second research objective was to determine if the work ethics differ among South Korean workers grouped by categorized occupations. Occupations were categorized into eight levels: (1) managers, (2) professionals, (3) clerks, (4) sales and services, (5), technicians and craftsman, (6) elementary workers, (7) armed forces, and (8) not employed at that time. Out of 941 respondents, 109 (11.58%) workers were managers, 297 (31.36%) indicated themselves as professionals, 114 (12.22%) respondents were clerks or related workers, 157 (16.68%) respondents worked for sales or services, 75 (2.55%) respondents were technicians and craftsman who worked in agriculture, technology, fishing, forest, engineering and related areas, 24 participants were elementary workers, 4 (0.43%) were armed forces, and 161 (17.11%) indicated that they were not employed at the time they were responding to the KESA. The significance of Levene's test of homogeneity of variance was greater than .05. The results of F-ratio revealed significant F-values at the .05 level for three factors of the KESA: initiative with $F(7, 933) = 5.78$, $p < .05$, $r = .20$; interpersonal skills with $F(7, 933) = .73$, $p > .05$, $r = .03$; thoughtfulness with $F(7, 933) = 3.05$, $p < .05$, $r = .47$; dependability $F(7, 933) = 3.57$, $p < .05$, $r = .16$. Both Bonferroni and Scheffe post hoc tests revealed that differences existed among groups only for initiative, but for interpersonal skills, thoughtfulness, and dependability there were no significant differences among groups. Both Bonferroni and Scheffe post hoc tests revealed that managers ($M = 5.58$, $SD = 0.81$) scored significantly higher than technicians and craftsman ($M = 5.14$, $SD = 0.74$) on initiative.

The third research objective was to compare the work ethics of South Korean workers grouped by employment status. Four levels of employment status were included: (1) full-time workers, (2) part-time workers, (3) self-employment, and (4) unemployed. Out of 941 respondents, 454 (48.25%) were full-time workers, 144 (15.30%) were part-time employees, 182 (19.34%) were self-employed, and 161 (17.11%) respondents were not employed when they participated in this study. Levene's test suggested that the variances were significantly homogeneous ($p > .05$) among groups. There was a significant effect of employment status on initiative, $F(3, 937) = 3.92$, $p < .05$, $r = .11$, however there were no significant effects of employment status on interpersonal skills, thoughtfulness, and dependability, $F(3, 937) = 1.04$, $p > .05$, $r = .06$; $F(3, 937) = 1.11$, $p > .05$, $r = .06$; $F(3, 937) = 1.58$, $p > .05$, $r = .07$, respectively. Both Bonferroni and Scheffe post hoc tests showed that self-employed workers ($M = 5.51$, $SD = 0.68$) scored significantly higher than unemployed respondents ($M = 5.25$, $SD = .72$).

5. Conclusions

The purpose of this study was to compare the work ethics of South Korean workers as measured by the Korean Employment Assessment Skills (KESA). The four factors of the KESA: initiative, interpersonal skills, thoughtfulness, and dependability were set as dependent variables and levels of education, categorized occupations, and employment status were independent variables, employing one-way ANOVA with F-ratios and Bonferroni and Scheffe post hoc tests. It is concluded that there was a significant effect of level of education on initiative, interpersonal skills, thoughtfulness, and dependability, indicating that as the educational level increased, the four aspects of work ethic increased. It is also found that there was a significant effect of different types of occupations on initiative and that there was a significant effect of employment status on initiative.

6. Discussion

Developing and distributing instructional materials for work ethic has been ongoing in the U.S. (e.g., State of Nevada Department of Education, 2014; Hill, 2016). Considering that the findings of the study showed that work ethic attributes increased as the level of education increased, it is implied that work ethic can be taught and developed at schools. To be employed and maintain jobs in the 21st globalized workplace, students and job seekers need to develop better employment skills and schools and career centers can help them learn and develop stronger work ethics. Strong work ethic and employability skills are emphasized by employers because employees with strong work ethic can lead to higher productivity and enhance profitability (Huang & Capelli, 2007). As the results of this study suggested that workers from different occupations showed different work ethic attributes, students and job seekers need to assess their employability skills to better understand themselves and use the results to develop specific employability skills they lack or that are required for a certain occupation. The findings of the study also suggested that self-employed workers scored higher on initiative than unemployed people. This implied that job seekers need to reflect their work ethics and career centers can use the results when they consult job seekers.

References

Blau, G. & Ryan, J. (1997). On measuring work ethic: A neglected work commitment facet. *Journal of Vocational Behavior, 51*, 435-448.

Blood, M. (1969). Work values and job satisfaction. *Journal of Applied Psychology, 53*(6), 456-459. doi:10.1037/h0028653

Goldstein, B., & Eichhorn, R. L. (1961). The changing Protestant Ethic: Rural patterns in health, work, and leisure. *American Sociological Review, 26*(4), 557-565.

Hammond, P. E., & Williams, K. R. (1976). The Protestant ethic thesis: A social-psychological assessment. *Social Forces, 54*(3), 579-589.

Hill, R. B. (2016). Welcome to the work ethic site [Web log post]. Retrieved from http://workethic.coe.uga.edu/index.html

Hill, R. B., & Petty, G. C. (1995). A new look at selected employability skills: A factor analysis of the occupational work ethic. *Journal of Vocational Education Research, 20*(4), 59-73.

Huang, F., & Capelli, P. (2007). Employee screening: Theory and evidence. *Research Collection School of Economics.* Retrieved from http://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=2029&context=soe_research doi:10.2139/ssrn.893261

Johnson, B., & Christensen, L. (2004). *Educational Respect: Quantitative, qualitative, and mixed approaches* (2nd ed.). Boston, MA: Pearson Education.

Kim, S. J. (2007). Identifying work ethic constructs using a Korean translation of the OWEI. (Doctoral dissertation). Retrieved from http://dbs.galib.uga.edu/cgi-bin/getd.cgi?userid=galileo&action=search

Miller, M. J., Woehr, D. J., & Hudspeth, N. (2002). The meaning and measurement of work ethic: Construction and initial validation of a multidimensional inventory. *Journal of Vocational Behavior, 59*, 1-39. doi:10.1006/jvbe.2001.1838

Mirels, H., & Garret, J. (1971). Protestant ethic as a personality variable. *Journal of Consulting and Clinical Psychology, 69*, 40-44. doi:10.1037/h0030477

Park, H., & Hill, R. B. (2016). Employability Skills Assessment: Measuring work ethic for research and learning. *Career and Technical Education Research, 41*(3), 175-192. doi:10.5328/cter41.3.175

Park, H., & Hill, R. B. (2017 in press). Psychometric properties of the Korean Employability Skills Assessment and Korean work ethic. *Career and Technical Education Research*.

Ray, J. J. (1982). The Protestant ethic in Australia. *Journal of Social Psychology, 116*, 127-138.doi:10.1080/00224545.1982.9924402

Rojewski, J. W., & Hill, R. B. (2014). Positioning research and practice in career and technical education: A framework for college and career preparation in the 21st century. *Career and Technical Education Research, 39*(2), 137-150. doi:10.5328/cter39.2.137

State of Nevada Department of Education. (2014). Employability skills for career readiness standards. Retrieved from http://cte-escr.org/

Weber, M. (2005). *The Protestant ethic and the spirit of capitalism*. New York: Routledge. Retrieved from http://www.d.umn.edu/cla/faculty/jhamlin/1095/The%20Protestant%20Ethic%20and%20the%20Spirit%20of%20Capitalism.pdf.

Wollack, S., Goodale, J., Wijting, J., & Smith, P. (1971). Development of the survey of work values. *Journal of Applied Psychology, 55*(4), 331-38

EXECUTIVE FUNCTIONING IN AUTISM SPECTRUM DISORDER: FROM THEORY TO REAL WORLD

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Abstract

Executive functions (EF) encompasses a broad range of cognitive processes that coordinate thoughts, emotions and behaviors during the resolution of novel tasks, including planning, working memory, inhibition, monitoring, generation and flexibility. They contribute to the individual's adaptation to their environment and allow them to function success-fully in their daily life. Consequently, executive disfunctions result in difficulties in emotional and behavioral adaptation. There is a strong association between deficits in executive functioning and neuropsychological disorders such as Autism Spectrum disorder (ASD). Neuropsychological tests traditionally used to measure executive functioning are poorly adjusted to the demands of real world.

This paper shows the ability of seven children with autism, to apply to the real world the executive skills they have learnt in an executive function training program. Before and after the intervention, parents and teachers were asked to fill out a questionnaire. The rating instrument has been developed for measuring executive functioning in children and it has the advantage of capturing behavior over an extended period of time and in different settings (e.g. home, school…).

The results of the pre-test-post-test analysis in parents and teachers show statistically significant differences in the two questionnaire factors: Total working memory and Total inhibition.

We highlight the need to focus assessment and intervention for people with autism on difficulties in everyday executive functioning in order to achieve a psycho-social adaptation.

Keywords: *Adaptive functioning, Autism spectrum Disorder, Executive function, Intervention.*

1. Introduction

Executive functions (EF) are cognitive processes that coordinate thoughts, emotions and behaviors during the resolution of novel tasks (Carlson, Zelazo & Faja, 2013; Diamond, 2013). EFs, also called executive control or cognitive control refer to a family of top-down mental processes needed when you have to concentrate and pay attention, when going on automatic or relying on instinct or intuition would be ill-advised, insufficient, or impossible. Using executive functions is effortful; it is easier to continue doing what you have been doing than to change, it is easier to give into temptation than to resist it, and it is easier to go on "automatic pilot" than to consider what to do next. EFs encompasses a broad range of cognitive processes, including planning, working memory, inhibition, monitoring, generation and flexibility. These skills are essential for goal-directed problem solving. They contribute to the individual's adaptation to their environment and allow them to function success-fully in their daily life. Consequently, executive disfunctions result in difficulties in emotional and behavioral adaptation (Diamond, 2013; Hill, 2004).

It was reported executive disfunctions in several neuropsychological disorders, autism among them (Ozonoff & Jensen, 1999; Penninton & Ozonoff, 1996; Russell, 2000). According to the criteria specified by DSM-5 (American Psychiatric Association, 2013), Autism Spectrum Disorder (ASD) includes alterations in two domains: persistent deficits in communication and social reciprocity across multiple contexts and they also exhibit restricted repetitive patterns of behavior, interests and activities as manifested in different aspects of their life. Frontal lobe lesions were the starting point of the executive disfunction theory in autism. Ozonoff, Pennington & Rogers (1991) demonstrated that people with autism share not only behavioral characteristics but also cognitive ones with patients with frontal lobe lesions such us: Difficulty to focus on the task and finish it without external environmental control, problems to establish new behavioral repertoires, limitations on productivity and creativity and lack of cognitive flexibility. These impairments affect cognitive, behavioral and personality areas marking individuals'

learning style and daily functioning. Afterwards several researches have reported executive deficits in children with autism (Pennington et al., 1996; Russell, 2000; Ozonoff, South & Provencal 2005; Russell, 2000; Verté, Geurts, Roeyers, Oosterlaan, & Sergeant, 2006).

The abundant literature on executive deficits in ASD contrasts with the lack of intervention programs and the effectiveness assessment in this area (Ozonoff et al, 2005; Belinchón et al, 2005; Güemes, Martín, Canal & Posada, 2009). Representative Psychological Tasks traditionally used to measure executive functioning are poorly adjusted to the demands of real world. In addition, several programs for improving executive functions show benefits closely tied to specific types of tasks (close transfers), but do not show an effect on other similar tasks (wide transfer). On the other hand, it has pointed out that the evidence on generalization of these skills to daily life are still scarce (Diamond, 2013).

2. Design

In this study we used a pre-test-post-test design without a control group equivalent.

3. Objective

The objective of this study is to analyze the ability of seven children with autism, to generalize executive skills they have learnt in a targeted intervention to improve executive functions to the real world.

4. Methods

4.1. Participants

The participants of the study were seven boys with ASD diagnosed according to DSM-5 criteria and aged from 6 to 12 years old.

4.2. Instrument

The Childhood Executive Function Inventory (CHEXI; Thorell & Nyberg, 2008) CHEXI is an inventory of executive functions for children; it is available for download free of charge on the Internet in several different languages. It includes items specifically related to executive behavior and is divided into four a priori subscales: Working Memory (9 items), Planning (4 items), Inhibition (6 items), and Regulation (5 items). Each item is rated on a scale from 1 (definitely not true) to 5 (definitely true). Higher scores indicating larger executive function deficits. However, using exploratory factor analysis, the authors showed that the CHEXI can be characterized by two factors: Inhibition and Working Memory. Based on the evaluations of parents and teachers this instrument can be considered a valuable instrument for identifying executive deficits in children from 5 to 12 years.

5. Results

The CHEXI was completed by parents and teachers of each one of the participants before and after intervention. In order to identify possible differences between cognitive changes relative to total working memory and total inhibition before (pretest) and after the intervention (post-test) an intra-group comparison was carried out by a Wilcoxon signed-rank test for non-parametric testing of the ranges with a significance level of $p < .05$. The results applied in parents (table 1) show statistically significant differences in both Total working memory ($Z = -2.384$; $p < .05$) and total inhibition ($Z = -2.205$; $p < .05$). Therefore, parents believe that after the intervention there has been an improvement in the assessed factors.

Table 1. Wilcoxon test. Pre-test/pos-test results for the CHEXI applied to parents.

	Pre-test		Post-test		Z	p
	M	SD	M	SD		
Total working memory	44.00	11.372	33.43	9.217	-2.384	.017
Total inhibición	46.57	4.429	40.86	4.776	-2.205	.027

In the questionnaire applied to teachers (table 2), we found moderate statistically significant differences in Total working memory (Z = −2.197; p < .05) and high differences in Total inhibition (Z = −2.043; p < .05). Teachers also believed that there was an improvement in the executive factors evaluated after the intervention.

Table 2. Wilcoxon test. Pre-test/post-test results for the CHEXI applied to teachers.

	Pre-test		Post-test		Z	p
	M	SD	M	SD		
Total Working memory	46.14	12.522	40.00	11.328	-2.197	.028
Total Inhibition	40.57	6.373	34.43	7.231	-2.043	.041

6. Conclusions

We must always keep in mind that the intervention must have as its main objective the daily functioning. This objective is especially important in autism because people with autism have a reduced global processing against local processing. This processing style makes generalization difficult. This research suggest that targeted executive functions interventions may improve daily executive functioning in autism.

This study has any limitation. The sample was relatively small; therefore, the research findings might be affected by the sample's size and the matching measures, weakening the results and conclusions; another limitation is the absence of control group that reduces the ability to generalize the results relative to the effectiveness of training. Further studies with larger samples might confirm and better clarify data obtained.

Given the limited research, further investigation of the relationship between executive functions interventions and improvements in executive daily functioning may prove useful in ASD.

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (DSM V). Arlington: American Psychiatric Publishing.

Belinchón, M., Posada, M., Artigas, J., Canal, R., Díez, A., Ferrari, M.J., Fuentes, J., Hernández, J.M., Hervás, A. Idiazábal, M.A., J. Martos, Mulas, F., Muñoz, J.M., Palacios, S., Tamarit J., Valdizán, J.R. (2005) Guía de buena práctica para la investigación de los trastornos del espectro autista. *Revista de neurología, 41*(6), 371-377.

Güemes, I., Martín, M. C., Canal, R., Posada, M., (2009). *Evaluación de la eficacia de las intervenciones psicoeducativas en los trastornos del espectro autista*. Madrid: IIER - Instituto de Salud Carlos III.

Carlson, S. M., Zelazo, P. D., & Faja, S. (2013). Executive function: Body and mind. In P. D. Zelazo (Ed.), *Oxford handbook of developmental psychology: Body and mind* (pp. 706-743). New York, NY: Oxford University Press.

Diamond, A. (2013). Executive functions. *Annual Review of Psychology*, 64, 135–168.

Hill, E. L. (2004). Executive dysfunction in autism. *Trends in Cognitive Sciences, 8,* 26–32.

Thorell, L. B., & Nyberg, L. (2008). The Childhood Executive Functioning Inventory (CHEXI): A new rating instrument for parents and teachers. *Developmental Neuropsychology, 33*, 536–552.

Ozonoff, S., Pennington, B.F. y Rogers, S.J. (1991). Executive function deficits in high-functioning autistic individuals: relationship to theory of mind. *Journal of Child Psychology and Psychiatry, 32*, 1081-1105.

Ozonoff, S., Jensen, J. (1999) Brief Report: Specific Executive Function Profiles in Three Neurodevelopmental Disorders. *Journal of Autism and Developmental Disorders, 29*(2), 171-176.

Ozonoff, S., South, M. & Provencal, S. (2005). Executive functions. In F.R.Volkmar, R. Paul, , A. Klin, D. Cohen (Eds.), *Handbook of Autism and Pervasive Developmental Disorders* (3rd ed., pp.606-627). New Jersey: John Wiley & Sons.

Pennington, B. F. y Ozonoff, S. (1996). Executive function and developmental psychopathology. *Journal of Child Psychology and Psychiatry, 37*, 51 - 87.

Russell, J. (2000). *El autismo como trastorno de la función ejecutiva*. Madrid: Panamericana.

Verté, S., Geurts, H., Roeyers, H., Oosterlaan, J. & Sergeant, J. (2006). Executive functioning in children with an autism spectrum disorder: Can we differentiate with the spectrum?. *Journal of Autism and Developmental Disorders, 36*(3), 351-372.

CHILDREN THEORETICAL FRAMEWORK TO LEARN COMPUTATIONAL THINKING

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Abstract

The focus of this paper is on the holistic modular layer model for Education & Training for the 21st Century in the macro competency Computational Thinking, addressed to childhood and adolescence. The concept is taken from primary sources, S. Papert and J.M.Wing, in a sense that isn't technology dependent neither independent. Discussing the "dual" constructivism learning theories (constructivism, constructionism) that best reflex the nature of knowledge in the case of CT. Connectivism is a complementary option that requires further research. CT is a macro competency from which it's possible to develop a 21st Century emerging single competence domain. It's an everywhere everybody competency, that needs to be initiated as early as possible. The crucial point is the teachers' learning, training and guidance. People come first then technology, so it's important to call for the need of Tech Humanism.
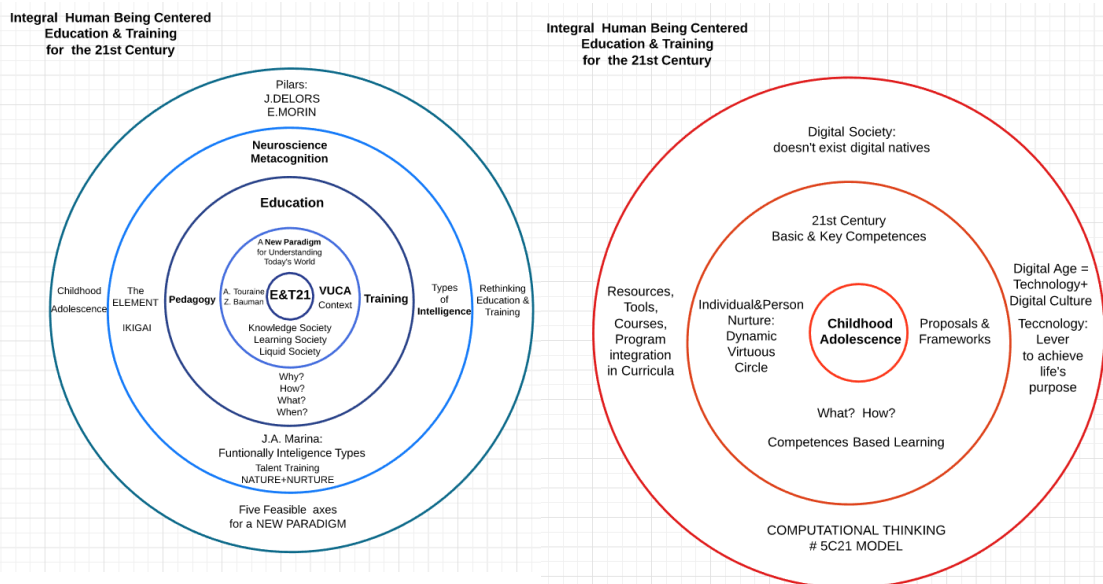
Keywords: Computational thinking, 21st century competencies, learning theories, problem-based learning, and tech humanism.

1. Introduction

This paper synthetizes the main aspects of a theoretical research developed in the ULPGC (Spain) and UPV (Spain) about Education and Training in children and young people for the 21st Century. The work focused in teaching & learning Computational Thinking (CT) as a macro competency that involves single basic competencies considered in several models worldwide/national admitted (CCR, P21, ATC21S, EU, LOMCE, etc.) Those competences, capacities, skills were: developing abstract thinking, with its different layers; algorithmic thinking, generalization, evaluation, problem decomposition, problem-based learning; creativity, critical thinking, communication, and collaboration.

Figure 1a. Modular layers' model, the basics.   *Figure 1b. Modular layers' model, the specific. CT.*

In Figures 1a (Modular Layers' Model: The Basics) and 1b (Modular Layers' Model: The Specific, Computational Thinking) this holistic vision about Education and Training for 21st Century is synthesized [1].

2. Computational thinking

CT deals first with people, then with technology; ideas are important, artefacts aren't. The foundations came from the pioneering work of S. Papert and J. Wing adapted to today's Knowledge and Learning Society in a VUCA world (acronym describing four categories: Volatility, Uncertainty, Complexity and Ambiguity).

Seymour Papert (1928-2016) is considered the Father of Educational Computing. "In the mid-1960s, when few people had even seen a computer, S. Papert was making it possible for children to use and program them. He spent his career inventing the tools, toys, software and projects that popularized the view of computers as incubators of knowledge" [2]. The best Papert tributes to what is named today CT are from obituaries written when he passed away (July, 31st) [3]. He worked for four years under J. Piaget in Genève (CH), in the 50's, then with Artificial-Intelligence (AI) pioneer Marvin Minsky who invited Papert to join him at MIT, in the '60s. He worked on learning theories, and was known for focusing on the impact of new technologies on learning in general (metacognition or learning to learn), and in schools as learning organizations in particular.

Jeannette M. Wing (1956) coined the current CT term. "It represents a universally applicable attitude and skill set everyone, not just computer scientists, would be eager to learn and use". Some quotes (personal selection) from her give consistency to the term "CT builds on the power and limits of computing processes, whether they are executed by a human or by a machine"; "CT is a fundamental skill for everyone, not just for computer scientists. To reading, writing, and arithmetic, we should add computational thinking to every child's analytical ability"; "CT involves solving problems, designing systems, and understanding human behaviour, by drawing on the concepts fundamental to computer science"; "CT is thinking recursively"; "CT is using abstraction and decomposition when attacking a large complex task or designing a large complex system"; "CT is thinking in terms of prevention, protection, and recovery from worst-case scenarios through redundancy, damage containment, and error correction"; "CT is using heuristic reasoning to discover a solution. It is planning, learning, and scheduling in the presence of uncertainty. It is search, search, and more searches, resulting in a list of Web pages, a strategy for winning a game, or a counterexample"; "CT is using massive amounts of data to speed up computation. It is making trade-offs between time and space and between processing power and storage capacity" (she considers every day examples that children might grasp); " CT will have become ingrained in everyone's lives when words like algorithm and precondition are part of everyone's vocabulary; when no determinism and garbage collection take on the meanings used by computer scientists, and when trees are drawn upside down"; "this kind of thinking will be part of the skill set of not only scientists but of everyone else. Ubiquitous computing is to today as CT is to tomorrow. Ubiquitous computing was yesterday's dream that became today's reality; computational thinking is tomorrow's reality", [3]. These are the ways in which schoolteachers could think and apply CT.

CT isn't exclusively Computer Science. CT is not coding and it is not programming, although they can overlap fruitfully; "is a fundamental, key, and not a rote skill" (mechanical routine); "a way that humans, not computers, think; complements and combines mathematical and engineering thinking"; "are ideas, way of thinking, not artefacts"; "CT is for everyone, everywhere". CT is "intellectually challenging and engaging scientific problems remain to be understood and solved. The problem domain and solution domain are limited only by our own curiosity and creativity".

In the absence of a single definition of this field, a set of core concepts and skills is again and again emerging from the literature to fill the gap. These include: abstraction, algorithmic thinking, decomposition, generalization, logical analysis and evaluation, Table 1summarizes CT concepts and competencies, [4], [5].

Table 1. Computational Thinking Concepts and Competencies.

CT Concepts	CT Competencies
Abstraction	Dealing with complexity through reducing unnecessary detail.
Algorithm	Identifying the processes and sequence of events.
Decomposition	Breaking complex artefacts, processes or systems into their component parts.
Generalisation	Identifying the patterns and commonality between artefacts, processes or systems.
Logical Analysis	Applying and interpreting Boolean logic.
Evaluation	Systematically (through criteria and heuristics) make substantiated value judgements.

There is a lack of consensus on the definition of CT at the moment. So synthesizing the operational definition is: CT deals with: 'the collaborative resolution of complex (depending upon the age

of the learner) problems, independent of the technological support that is used. CT offers a new language and orientation to tackle problems in other areas of life, beyond Computer Sciences'.

3. Learning theories

T. Bates [6] points out in his open textbook, talking about this topic:
"...there is an impressive body of evidence on how teaching methods and curriculum design affect deep, autonomous, and reflective learning. Yet most faculty are largely ignorant of this scholarship, and instructional practices and curriculum planning are dominated by tradition rather than research evidence. As a result, teaching remains largely didactic, assessment of student work is often trivial, and curricula are more likely to emphasize content coverage than acquisition of lifelong and life-wide learning skills".

Knapper, 2010

"There is nothing so practical as a good theory".

Kurt Lewin, 1951

There are three constructs -at least two recognized as learning theories nowadays- related with CT's teaching and learning: Constructivism, Constructionism, and Connectivism.

3.1. Constructivism vs. constructionism

S. Papert was profoundly influenced by Piaget's work on how children make sense of their world -not as "miniature adults" or empty vessels- but as active agents interacting with the world and building ever-evolving theories. Piaget's constructivist principles in the nascent field of child development were the foundation for Papert's later development of constructionism in educational contexts.

Both Piaget and Papert believed that the child creates knowledge in the active process of interacting with the surrounding world. Constructivism highlights the interests and abilities of children to achieve specific educational goals at different ages. Constructionism, on the other hand, focuses on the manner of learning. This highlights that these two theories are different from one another.

The difference between constructivism and constructionism has its basis on the focus of each theory. Constructivism and Constructionism are two educational, psychological theories that have been influenced by one another. Table 2.

Table 2. Differences between constructionism and constructivism.

Papert's Constructionism	Piaget's Constructivism
Knowledge, even in adult experts, remains essentially grounded in contexts, and shaped by uses, and the use of external supports and mediation remains, in his mind, essential to expand the potentials of the human mind at any level of their development.	Knowledge is experience that is acquired through interaction with the world, people and things.
Mainly is an educational method, based upon the constructivism way of learning.	Students construct their knowledge.
Learning is easier when based in public, real, artefacts rather than it's in mental models.	Learning is a compilation of complex structures of knowledge.
His papers don't rely on the constructivism philosophy.	Teaching is always indirect.
It's difficult to manage when the student tries to transfer a complex concept; trying to construct their own meaning.	A theory of learning that ignores resistances to learning misses the point. Kids have good reasons not to abandon their views in the light of external perturbations.
They differ mainly in the method.	Students learn constructing their own, unique meaning, so it doesn't make sense to make assessment by any fixed norm stated, set, "a priori".
The students will be more learning involved if they construct anything the others could perceive, challenge, and maybe use.	Constructivist hypothesis currently can't be checked.
Through the construction the students could raise to complex problems. They will try to solve them and learn, as well as being motivated by the construction itself.	From the philosophical perspective things became difficult: Is there any concrete reality? if individuals perceive it in different ways.
The physical construction is a proper way to get mental maps or models.	Focus on mental constructions; those constructions are unique.
Talk about: physical levels, method, practical approach.	Talk about: mental levels, theories, philosophy, science.

Papert wrote in 1991 [7]:
Constructionism shares constructivism's connotation of learning as 'building knowledge structures' irrespective of the circumstances of the learning. It then adds the idea that this happens

especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe.

Following E. Ackermann's [8], the distinction holds, and integrating both views can enrich the understanding of how people learn and grow. Rationale:

Piaget's constructivism offers a window into what children are interested in, and able to achieve, at different stages of their development. The theory describes how children's ways of doing and thinking evolve over time, and under which circumstance children are more likely to let go of —or hold onto— their currently held views. Papert is interested in how learners engage in a conversation with [their own or other people's] artefacts, and how these conversations boost self-directed learning, and ultimately facilitate the construction of new knowledge. He stresses the importance of tools, media, and context in human development. Integrating both perspectives illuminates the processes by which individuals come to make sense of their experience, gradually optimizing their interactions with the world.

3.2. Connectivism

Following Bates [6]:

The concurrence of both constructivist approaches to learning and the development of the Internet has led to the development of a particular form of constructivist teaching, originally called computer-mediated communication (CMC), but which has developed into what Harasim (2012) now calls online collaborative learning theory (OCL).

This approach to the use of technology for teaching is very different from the more objectivist approaches found in computer-assisted learning, teaching machines, and artificial intelligence applications to education, which primarily aim to use computing to replace at least some of the activities traditionally done by human teachers. With online collaborative learning, the aim is not to replace the teacher, but to use the technology primarily to increase and improve communication between teacher and learners, with a particular approach to the development of learning based on knowledge construction assisted and developed through social discourse.

Connectivism (coined by G. Siemens and S. Downes) is a relatively new theory of learning or epistemology (there's not even agreement about which it is), it is still being refined and developed, and it is currently highly controversial, with many critics. Connectivists such as Siemens and Downes tend to be somewhat vague about the role of teachers or instructors, as the focus of connectivism is more on individual participants, networks and the flow of information and the new forms of knowledge that result.

Some of the criticisms may be overcome as practice improves, as new tools for assessment, and for organizing co-operative and collaborative work with massive numbers, are developed, and as more experience is gained. More importantly, connectivism is really the first theoretical attempt to radically re-examine the implications for learning of the Internet and the explosion of new communications technologies

Bates concludes: Different theories of learning reflect different positions on the nature of knowledge. With the possible exception of connectivism, there is some form of empirical evidence to support each of the theories of learning outlined in this section.

4. CT in the classroom

The technological support used is in a constant disruptive change and transformation. This is another challenge to the implementation of CT in the classroom by teachers. Having started with gamification, symbolic programing (block based vs. text based), processes' automation, robotics and mobile apps, now it's the turn to use CT with Artificial Intelligence, Virtual Reality, Augmented Reality, Mixed Reality, drones, 3D-impression, new robots generation, and so on.

CT is a macro competency from which it's possible to develop, foster, a 21st Century emerging single competence domain, let say: collaborative, cooperative work; communication; creativity, critical thinking; problem solving abilities; algorithmic thinking; applying (ethical) rules when using ICT. At the beginning 2017, M. Romero (coCréaTIC, Université Laval, Quebec, Canada) [9] and this group [1] propose, independently, two quite similar models: #5c21; although no model is coined hers is taken as reference, as it's deemed adequate and offers a good fit in the context addressed.

CT is for everybody, everywhere; so it isn't only for STEM oriented students. CT is a 21st key competency that is needed as well by arts; music, social, health and humanities oriented ones. It´s an aspect of growing relevance, children, and adolescents need to start learning as soon as possible a new related competency: "[good] data based reasoning". This is a must-have skill for the future of work and life in a world of exponentially increasing data, information and knowledge.

Teachers must realize that CT can be applied across a number of disciplines beyond the STEM subjects. So they do need learn and train these matters. This is the crucial, key point. They need as well to develop competencies on "content curation" and learn to look for, use and adapt the best tools, resources, artefacts, and software for children and young people available in Internet. Their value added is in the

learning process not in the design of content. This matters in their initial education and training stages (formal education) and the need to learn long life (formal and non formal education).

Tech Humanism might be at the centre of learning the CT macro competency. It is necessary that all teachers declare themselves a tech humanist. Technology needs to be encoded with the best of humanity. The goal is to achieve the best future for most people. It's necessary to recognize the humanity in the data that is mined for profit, to ask what it means to be human when the characteristics that were traditionally though as exclusive to mankind now begin to be found on machines. It's necessary to have a clear, integrating Tech Humanist Manifesto III as the *Why CT?* A change in the approach with AI and the machine learning advent is also necessary: the machine learns, humans lead.

5. Conclusions

The conclusions can be summarized in the following items:

a.   Learning and Teaching any macro competency or competency might be embedded in a holistic model of E&T for the 21st Century.

b.   There is not a general agreement about what CT is. An initial operational definition is proposed here.

c.   Teaching and learning CT suits better in a constructivist and constructionism learning theory. Nevertheless more research and experiences are needed to integrate connectivism.

d.   CT fits not only for STEM students. It's for everyone. The earlier they start, the better. Children aren't "digital natives", they must be educated and trained to the use of technologies. Why digital technologies?

e.   Learning-teaching-guiding programs for teachers in compulsory education are needed, even in the previous level.

f.   Individuals and persons are first, then technology. A CT learning, teaching and living humanism- oriented is proposed.

References

Ackermann, E. (2001, January). Piaget's Constructivism, Papert's Constructionism: What's the difference? Future of Learning Group Publication, 5(3), 438. Retrieved from: http://learning.media.mit.edu/content/publications/EA.Piaget%20_%20Papert.pdf

Bates, T. (2014, July 29). *Learning theories and online learning*. Message posted to: https://www.tonybates.ca/2014/07/29/learning-theories-and-online-learning/

Blikstein, P. (2016). Seymour Papert's Legacy: Thinking About Learning, and Learning About Thinking. S. Papert Obituary. Stanford. Graduate School of Education. TLTL. Retrieved from: https://tltl.stanford.edu/content/seymour-papert-s-legacy-thinking-about-learning-and-learning-about-thinking

Bocconi, S., Chioccariello, A., Dettori, G., Ferrari, A., Engelhardt, K. (2016). Developing computational thinking in compulsory education – Implications for policy and practice; EUR 28295 EN; doi: 10.2791/792158.

Catlin, D., & Woolard, J. (2014, July). Educational Robots and Computational Thinking. Paper presented at Conference: 4th TRTWR & RIE 2014 - 4th International Workshop "Teaching Robotics & Teaching with Robotics" & 5th International Conference "Robotics in Education" 2014, At Padova, Italy Retrieved from: https://www.researchgate.net/publication/264043999_Educational_Robots_and_Computational_Thinking

González, K. (2017). *Aprendizaje de competencias para el siglo XXI, mediante el desarrollo del pensamiento computacional, en alumnos de primaria: un caso piloto en Canarias* (Doctoral dissertation, in Spanish). Unpublished doctoral dissertation. To be published in ULPGC Thesis Repository. Universidad de Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain. Author access: kilian57@gmail.com

Papert, S. (1980). *Mindstorms: Computers, Children, and Powerful Ideas.* New York. Basic Books, Inc. Publishers.

Romero, M. (2017, 22 January) *#BETT2017: From computing to computational thinking: Encouraging creative approaches to problem solving across the curriculum.* Message posted to: https://margaridaromero.wordpress.com/2017/01/22/bett2017-from-computing-to-computational-thinking-encouraging-creative-approaches-to-problem-solving-across-the-curriculum/

Wing, J.M. (2006, March). Computational Thinking. It represents a universally applicable attitude and skill set everyone, not just computer scientists, would be eager to learn and use. 49 (3), 33-35. Retrieved from: https://www.cs.cmu.edu/~15110-s13/Wing06-ct.pdf

ANALYZING THE IMPACT OF LEVELING MATHEMATICS COURSES OVER STUDENTS' PERFORMANCE IN LATER SUBJECTS

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Abstract

Mathematics is an important requirement in an undergraduate engineering program, it offers core knowledge that engineers must have; however, it is common that mathematics courses of a program are also the most difficult and one of the reasons that many students fail in their studies. A leveling course offers foundational knowledge related with a specific subject that a student must have. In Mexican Autonomous Metropolitan University (UAM for its Spanish acronym), exist a leveling course that provides students with mathematics subjects so they can have a better performance in more advanced subjects; however, it is not clear whether the existence of this course or the path students follow, is really helping in later and more complex courses. This work shows the analysis of students' performance in the leveling "Mathematics Workshop" course and its impact in two later courses "Complements of Mathematics" and "Introduction to Calculus". The goal of this paper is to determine if it is appropriate that a student must take or not "Mathematics Workshop" and evaluate if there exists a relationship between the academic performance in this course and the next ones.

Keywords: Impact of previous courses, leveling courses, mathematics courses, students' performance, undergraduate programs.

1. Introduction

Using statistic and machine learning techniques for processing data and finding valuable information is a field that has been worked for decades (Tan, Steinbach, & Kumar, 2006). This way of analyzing data is known as Data Mining, when these techniques are applied to academic data, it is known as Educational Data Mining (Romero, & Ventura, 2010).

Academic environments produce a lot of historic information about several topics; these amounts of data can be analyzed for finding interesting patterns to allow obtaining knowledge about a certain problem, one of the most analyzed is the academic performance of the students at several levels, from a single exam, a course, or even, their whole studies.

At UAM, after an engineering student is accepted, he must take a diagnostic exam, if his marks are not good enough, he must take a first leveling course named "Mathematics Workshop" (MW) (División de Ciencias Básicas e Ingeniería – Licenciaturas., n.d.) which contents are related with elementary math concepts like algebra, factoring, numbers theory, quadratic functions and linear equation systems. The purpose of this course is to help students to develop their foundational mathematics knowledge so they have a better performance over later courses "Complements of Mathematics" (CM) and "Introduction to Calculus" (IC) (División de Ciencias Básicas e Ingeniería – Licenciaturas., n.d.). The leveling course adds a trimester (scholar period at UAM) to finish an engineering program and it is not clear the impact that taking or not this course has over the performance of later courses already mentioned.

This work shows the analysis, using statistic and machine learning techniques, of the performance over MC course considering if the student takes it or not, and if it was taken, his performance considering criteria like approving mark, amount of tries before approving it (at UAM, a student has five opportunities to take a course) and time elapsed before taking CM and IC courses. The goal of this analysis is to determine the impact of these criteria over the academic performance in later mathematics courses.

Results from this work could contribute to analyze whether it is appropriate that a student take or not MW course and to evaluate if there exists a relationship between the academic performance in this leveling course and the next ones. Educators can make decisions about the pertinence of the existence of

this leveling course and if it is really helping students to succeed with later and more complex mathematics courses.

2. Methodology

The methodology has two main stages: obtaining and transforming data.

2.1. Obtaining data

For analyzing the impact of the leveling course MW, we considered two sources of data, the General File of Students (GFS) that contains personal data of every student at UAM. From this information, we considered only the first trimester. Another source of information was the student records, known as *kardex* at UAM, this file contains all the courses studied by every student, including the period when it was took, and the obtained mark. GFS and *kardex* were processed for obtaining the next information for two groups of students:

• Students that approved MW through a diagnostic exam and the obtained mark.

• Students that took MW and approved it, the obtained mark and the amount of attempts until they approved it.

For each group of students, we obtained:

• Time, in trimesters, elapsed before coursing CM and the mark obtained in their first try.

• Time, in trimesters, elapsed before coursing CM and the mark obtained in their first try.

Results from this processing are presented in Table 1 for CM and in Table 2 for IC. For each table, in parenthesis, the mark assigned at UAM.

Table 1. Percentage of marks in CM course according the performance in MW course.

Mark in MW	Very Good (MB)	Good (B)	Sufficient (S)	Not Approved (NA)
MB in diagnostic exam	40.4 %	27.3 %	13.2 %	19.1 %
B in diagnostic exam	23.9 %	32.8 %	18.8 %	24.5 %
MB at the first try	25.9%	27.8 %	20.8 %	25.5 %
B at the first try	13.5 %	24.4 %	23.2 %	38.9 %
S at the first try	9.3 %	17.9 %	21.5 %	51.3 %
MB at the second try	13.5 %	28.9 %	25.2 %	32.4 %
B at the second try	13 %	20.7 %	18.8 %	47.5 %
S at the second try	6.8 %	18.3 %	22.9 %	52 %
MB at the third try	0 %	0 %	44.4 %	55.5 %
B at the third try	6.8 %	17.3 %	24.2 %	51.7 %
S at the third try	6.2 %	25.8 %	13.4 %	54.6 %

Table 2. Percentage of marks in IC course according the performance in MW course.

Mark in MW	Very Good (MB)	Good (B)	Sufficient (S)	Not Approved (NA)
MB in diagnostic exam	40.5 %	24.5 %	10 %	25 %
B in diagnostic exam	17.6 %	26.3 %	19.9 %	36.2 %
MB at the first try	22 %	23.9 %	20.8 %	33.3 %
B at the first try	9.8 %	17.3 %	21.7 %	51.2 %
S at the first try	6.5 %	12.9 %	15.4 %	65.2 %
MB at the second try	13.5 %	23.7 %	15.4 %	47.4 %
B at the second try	6.8 %	19.4 %	13.6 %	60.2 %
S at the second try	8.3 %	14.6 %	17.2 %	59.9 %
MB at the third try	33.4 %	11.1%	11.1 %	44.4 %
B at the third try	0	7.7 %	15.4 %	76.9 %
S at the third try	6.5 %	13 %	18.2 %	62.3 %

2.2. Transforming Data

For determining the impact of the performance in MW course in later courses, was generated a correlation matrix. As antecedents we considered: how the student approved MW, the obtained mark, the number of tries and the time elapsed before he took this course for the first time the next courses. As consequent, we contemplated: the mark obtained in courses CM and IC.

It was necessary grouping the antecedents and consequent for each course using the following criteria:

1. How a student approved MW course (AMW) can have the following values:
   - DIAG. The student approved MW through the diagnostic exam.
   - FIRST. The student took MW and approved it in its first try.
   - SEC. The student took MW and approved it in the second opportunity.
   - MORE. The student took MW and approved it in the third or later opportunities.
2. Mark in the MW course (MMW).
3. Time in trimesters (TIME) elapsed before the student took for the first time CM or IC courses after approving MW course. Possible values are:
   - EXAM. The student approved the diagnostic exam; so in the same trimester took CM or IC courses.
   - NEXT. The student took MCM or MIC course the next trimester after approving MW course.
   - ONE, TWO OR MORE. Time elapsed before the student took CM or IC courses after approving MW that is one, two and more trimesters, respectively.

And, for the consequent, there is only one criterion: the first mark obtained when the student took CM or IC courses.

We processed 5,095 relationships between MW and CM courses and, 4,231 for MW and IC courses. For generating a correlation matrix, values of antecedents and consequences were converted to numeric values, as follows:

- Marks for MW, CM or IC courses were transformed to numerical values: MB to 10, B to 8, S to 6 and NA to 5.
- AMW values were converted into: DIAG, FIRST, SEC and MORE to 0, 1, 2 and 3, respectively.
- TIME values were converted into: EXAM, NEXT, ONE, TWO and MORE to -1, 0, 1, 2 and 3, respectively.

3. Results and analysis

Two kinds of analysis were performed: statistical results from Table 1 and 2 and, interpretation of regression and correlation models. The goal was searching for similar behaviors.

3.1. Statistical results analysis

Considering the results shown in Table 1, students that approved MW through the diagnostic exam, 19% that approved with MB did not approve CM in their first try and, 24.5% that obtained B, neither approved it at their first opportunity. In general, from 723 students that approved through a diagnostic exam, 22.5% didn't approve CM at their first try.

The percentage of students that took and approved MW in their first chance and did not approve CM in their first try was: 25.5% for the ones that obtained MB, 38.9% for B and 51.3% for S. This gives a total of 41.11% of students that did not approve CM after approving in their first opportunity MW.

Considering students that approved MW in their second opportunity and did not approve CM at their first try, was found that: 32.4% of students have obtained MB in MW, 47.5% obtained B and 52% obtained S. Total amount of students that did not approve CM after approving in their second opportunity MW was 47.6%.

Finally, the group of students that approved MW in more than two opportunities and did not approve CM in their first try shows the next information: the ones that obtained MB and did not approve CM were 55.5%, for B were 51.7% and, for S were 54.6%. Considering this, 54% of the students that approved MW in more than two tries, did not approve CM at their first opportunity.

From the data in Table 2, related with MW and IC courses, were obtained the next results. Considering students that approved MW through the diagnostic exam and did not approve IC, the percentage for each mark was: 25% for those ones that obtained MB and 36.2% for the ones that obtained B. This represents that 32.2% of the total of students that approved MW through the diagnostic exam did not approve IC in their first try.

The percentage of students that took and approved in their first opportunity MW but did not approve in their first try IC was: 33.3% for the ones that obtained MB, 51.2% for B and 65.2% for S. Considering this, the total was 53%.

About students that coursed and approved in their second opportunity MW but did not approve in their first try IC, the results were: 47% for the ones that obtained MB, 60.2% for B and 59.9% for S. Total of students that did not approve IC after approving MW in their second try was 58.04%.

Finally, for students that coursed and approved in more than two opportunities MW but did not approve in their first try IC, the results are: 44.4%, 76.9% and 62.3% that have obtained MB, B and S, respectively. This represents that 64.4% of students that approved in more than two opportunities MW, did not approve in their first try IC.

3.2. Regression and correlation results analysis

Were analyzed the correlation coefficients for determining the importance of each antecedent over the consequent and if it affects in direct (positive value) or indirect (negative value) way. Consider that as greater the value (not considering the sign), more impact has an antecedent over the consequent.

Correlation values for MW and CM are presented in Table 3.

Table 3. Correlation values for the relationship "Complements of Mathematics" with "Mathematics Workshop".

	MCM	MMW	AMW	TIME
MCM	1.0	0.25	-0.184	-0.155

Model of Linear Regression for this relationship is presented in (1)

$$MCM = 5.05 + 0.25\ MMW - 0.28\ AMW - 0.123\ TIME \tag{1}$$

Table 4 presents the correlation values for MW and IC

Table 4. Correlation values for the relationship "Introduction to Calculus" with "Mathematics Workshop".

|	MIC	MMW	AMW	TIME
MIC	1.0	0.26	-0.16	-0.12

Model of Linear Regression for this relationship is presented in (2)

$$MIC = 4.57 + 0.26\ MMW - 0.25\ AMW - 0.03\ TIME \tag{2}$$

As coefficients of the correlation shows, for the relationship of MC with CM and IC, Mark in MC (MMW) has a direct influence; this means that as bigger mark in MW, bigger mark in both courses. The relationships between the way, and tries, in which a student approved MW (AMW) and the later courses is inverse, meaning that as more tries for approving MW, lower will be the mark in CM. A similar behavior can be identified with the time passed before coursing CM and IC after approving MW.
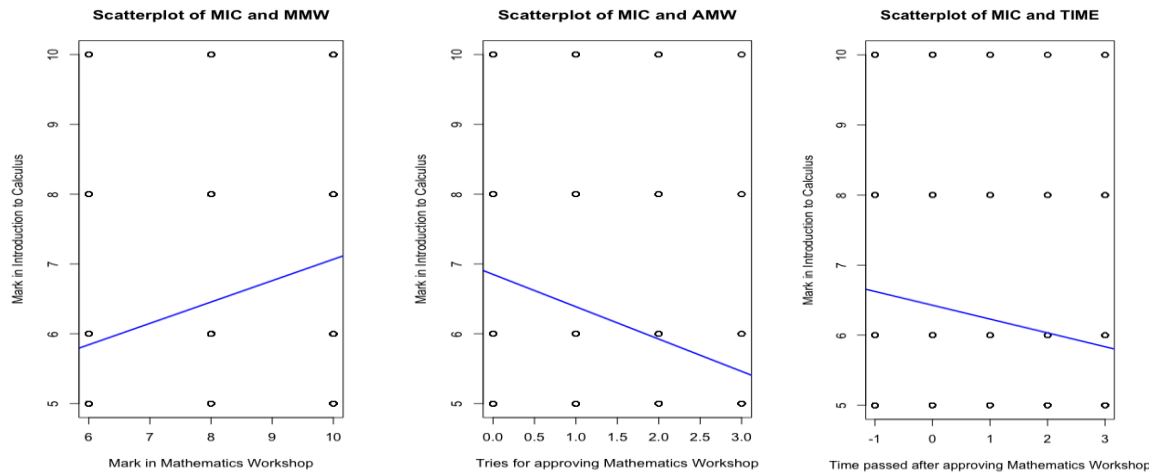
Graphic representation of these trends can be seen in Figure 1 for MW and CW.

Figure 1. Trends for the relationship "Complements of Mathematics" with "Mathematics Workshop".
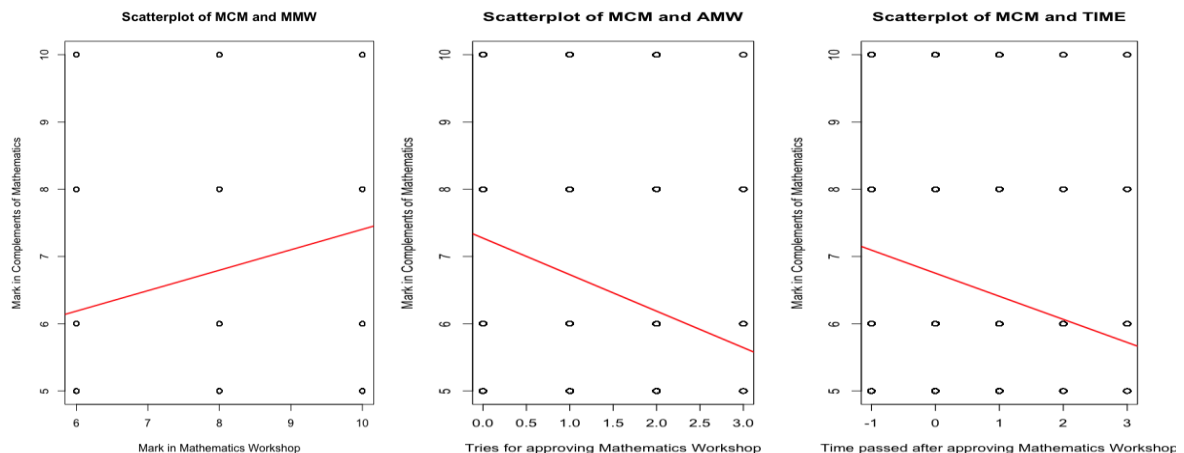
Finally, Figure 2 presents the trends for the relationship between IC and MW.

Figure 2. Trends for the relationship "Introduction to Calculus" with "Mathematics Workshop".

4. Conclusions

This work presents an analysis of statistical data for determining if the leveling course "Mathematics Workshop" is helping students to have a better performance in later courses, such as "Complements of Mathematics" and "Introduction to Calculus".

The results obtained from the analysis show a similar behavior in "Complements of Mathematics" between the students who exempted the "Mathematics Workshop" through a diagnostic exam and the students who that took and approved the "Mathematics Workshop" with MB or B mark. This behavior is similar for the course of "Introduction to Calculus", but only with students who obtain a mark of MB in "Mathematics Workshop", and only for those who approved it in a first attempt. However, the students who did not approve the course are considerable.

However, it is not clear that students that took "Mathematics Workshop" more than once and obtained less than MB have a good performance in the later courses, the percentage of students that did not approve them is very high and increase every time students take "Mathematics Workshop".

Can be concluded that having a very good performance in "Mathematics Workshop" can help with "Introduction to Calculus" and "Complements of Mathematics", but not in an expected way. It is also clear that students that do not have this behavior in the leveling course are having problems in the next courses. As a suggestion, the content of "Mathematics Workshop" must be reviewed for assuring that it really prepares students for more advanced courses; also, the way students are evaluated should be reviewed to assure that only student with a high performance are allowed to approve the course.

As graphics shown, the time passed after approving "Mathematics Workshop" and studying the next topics is important. Students must be made aware about the importance of taking a course immediately after approving the previous one.

References

División de Ciencias Básicas e Ingeniería – Licenciaturas. (n.d). Retrieved April 19, 2018, from http://cbi.azc.uam.mx/es/CBI/Tronco_de_Nivelacion_Academica

División de Ciencias Básicas e Ingeniería – Licenciaturas. (n.d). Retrieved April 19, 2018, from http://cbi.azc.uam.mx/es/CBI/Tronco_General

Romero, C & Ventura S. (2010) Educational data mining: a review of the state of the art. *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews), 40*, 57-66.

Tan, P. N, Steinbach, M., & Kumar, V. (2006). *Introduction to data mining* (Vol. 1). Boston, MA: Pearson Addison Wesley

ASSESSMENT OF PHYSICS PRACTICAL WORK USING INNOVATIVE COMPUTER-BASED TECHNOLOGY SYSTEM

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Abstract

The daunting nature of the laboratory environment poses enormous challenges to students when performing practical work. The assessment of laboratory practical work is characterised by inherent challenges associated with the technical tasks performed as part of the process of executing scientifically acceptable laboratory reports. Meaningful assessment of physics practical work in particular requires the adoption of innovative approaches that make provision for development of scientific literacy and laboratory competence through well-structured laboratory activities. In response to this key imperative, an innovative computer-based technology system has been adopted for assessment of physics practical work at a South African university for several years. By its very nature, the innovative computer-based technology system is primarily a platform consisting of a meticulously developed database encapsulating various experiments. The database provides unique characteristic features for each experiment and facilitates objective assessment of practical work per work station. In addition, the computer-based technology system provides the capacity to assess a considerable number of experiments efficiently within a short duration. The utilisation of the innovative computer-based technology system provided opportunities for meaningful assessment of physics practical work. Furthermore, the system facilitated the identification of the inherent conceptual and technical difficulties associated with the compilation of a plausible laboratory report leading to appropriate implementation of relevant remedial interventions to address pervasive knowledge gaps. Some of the difficulties encountered by the students include plotting of graphs and their interpretation as well as performance of mathematical calculations pertaining to various experiments. The theoretical implications for pedagogic innovation are discussed.

Keywords: Practical work, computer-based technology system, assessment, laboratory environment.

1. Introduction

Laboratory practical work plays an increasingly important role in the development of practical skills and scientific literacy. The daunting nature of the laboratory environment poses enormous challenges to students when performing practical work as a result of lack of prior meaningful exposure to practical work. Demystifying the nature of practical work requires provision of meaningful opportunities for the development of laboratory competence through the maximization of laboratory experiences. Meaningful assessment of physics practical work in particular requires the adoption of innovative approaches that make provision for development of scientific literacy and laboratory competence through well-structured laboratory activities. It is a known fact that laboratory practical work is a major consideration in the teaching and learning of physics in schools and universities (Vilaythong, 2011). In terms of their pedagogic value, laboratory experiences can make physics more real and illustrate the way physicists work in order to gain answers and offer insights into the physical world (Vilaythong, 2011). In addition, laboratory practical work helps students to make links between the domain of objects and observable properties as well as events and domain of ideas (Millar, 2004). Furthermore, meaningful exposure to laboratory practical work leads to the improvement of students' practical skills and their ability to understand theory (Hanif, Sneddon, Ahmadi & Reid, 2009).

The role of computer-based technology systems in supporting teaching and learning in practical work is paramount. However, inadequate attention has been directed to the critical examination of how new technologies can enhance experiences in the laboratory despite the fact that significant changes in technologies have offered new resources for teaching and learning (Lunetta, Hofstein & Clough, 2007). In

order to maximize the benefits of practical work, there is a crucial need to adopt innovative approaches that can facilitate meaningful assessment of practical work itself. In view of these practical considerations, a computer-based technology system was adopted for assessment of physics practical at a South African university.

2. Research design and methodology

A computer-based technology system was adopted for assessment of physics practical work at a South African university with a view to foster pedagogic innovation. The computer-based technology system is an assessment tool consisting of a database based on various experiments. The utilization of the system provides opportunities for objective assessment of practical work per work station. As an added advantage, the system provides the capacity to assess substantial number of experiments efficiently within a short duration. Students' experimental data is checked against reference data forming an integral part of the database. Structural aspects of the assessment criteria include key elements such as results (**R**), accuracy (**A**), graph (**G**) and total (**T**) mark allocation for each experiment. The assessment criteria also makes provision for careful evaluation of relevant theoretical calculations associated with each experiment.

3. Results and discussion

Figure 1 below provides the assessment criteria for an experiment based on the description of motion in terms of the velocity versus time graph for constant positive acceleration. The students encountered difficulties with the choice of appropriate scale when plotting the graph. Performance of mathematical calculations such as the determination of the slope associated with the experiment was problematic as well as the interpretation of the graph in terms of the description of motion. In addition, the determination of the initial velocity, displacement and the acceleration associated with the motion was a major conceptual hurdle for the students.

Figure 1. Description of motion: Velocity versus time graph for constant positive acceleration.
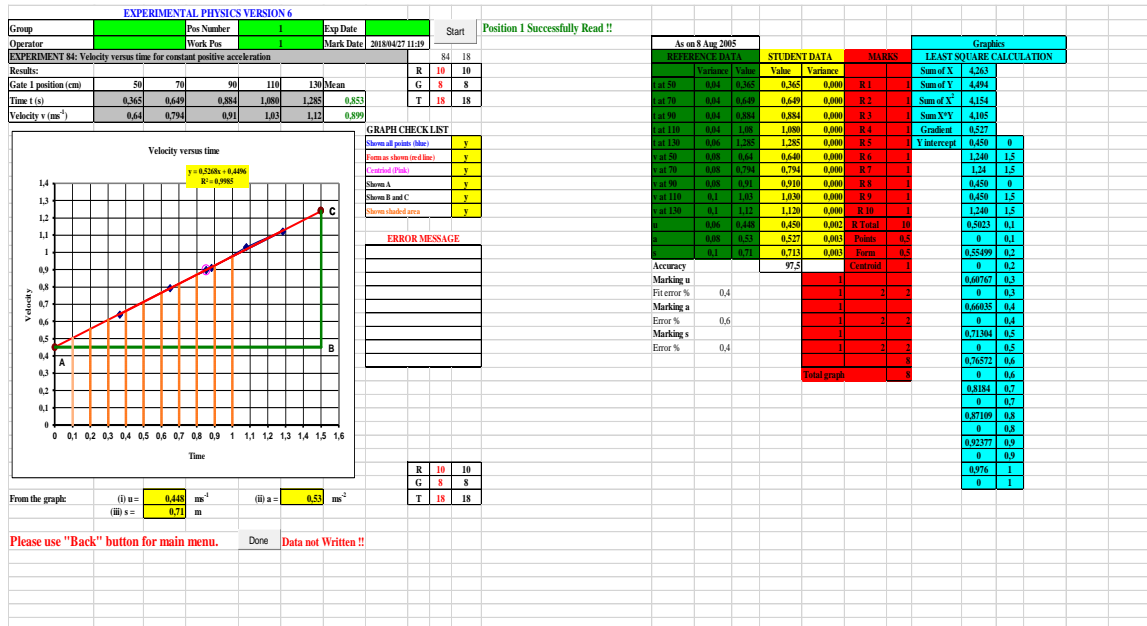

Figure 2 below provides the assessment criteria for an experiment based on the determination of unknown resistance by Ohm's law. In this case, the determination of the unknown resistance was complicated by the fact that the current (I) was expressed in milli-amperes (mA) which required conversion to amperes as the SI unit for current. Students demonstrated inadequate mastery of conversion of units. Another difficulty encountered by the students related to the interpretation of the graph in terms of the provision of the meaningful relationship between the current and the voltage measured.

Figure 2. Determination of unknown resistance by Ohm's law.

Figure 3 below provides the assessment criteria for an experiment based on the determination of the focal length of a convex lens by the lens equation.

Figure 3. Determination of the focal length of a convex lens by the lens equation.

The determination of the focal length of a convex lens by the lens equation involved reciprocals which were problematic to the students. This difficulty can be attributed to students' inability to manipulate fractions. The utilisation of the innovative computer-based technology system facilitated the identification of the conceptual difficulties encountered by the students which led to the appropriate implementation of remedial interventions to address pervasive knowledge gaps. This pedagogic advantage is consistent with the notion that computer-based technology systems and their peripherals can

be used to aid long-term investigations, for example, in data-logging experiments (Dori, Sasson, Kaberman & Herscovitz, 2004) and can also be used in visualizing data as well as modelling scientific phenomena (Reiser, Tabak, Sandoval, Smith, Steinmuller & Leone, 2001). The appropriate graphical interpretation skills are vitally important in terms of the development of understanding of meaningful relationships between key parameters associated with various scientific phenomena. The acquisition of these key skills hinges to a large degree on data visualization and modelling of scientific phenomena.

In the final analysis, the utilisation of the innovative computer-based technology system provided the capacity to identify conceptual difficulties encountered by students in relation to the performance of various experiments. The benefits of such a system ought to be harnessed to ensure meaningful acquisition of a repertoire of practical skills through the development of scientific literacy and laboratory competence.

4. Conclusions

The utilisation of the innovative computer-based technology system provided opportunities for meaningful assessment of physics practical work. Furthermore, the system facilitated the identification of inherent conceptual and technical difficulties associated with the compilation of a plausible laboratory report leading to appropriate implementation of relevant remedial interventions to address pervasive knowledge gaps.

References

Dori, Y. J., Sasson, I., Kaberman, Z. and Herscovitz, O. (2004). Integrating case-based computerized laboratories into high school chemistry. *The Chemical Educator*, **9**, 1–5.

Hanif, M., Sneddon, P.H., Ahmadi, F.M.A. & Reid, N. (2009). The perceptions, views and opinions of university students about physics learning during undergraduate laboratory work. *European Journal of Physics*, **30**, 85-96.

Lunetta, V.N., Hofstein, A. & Clough, M.P. (2007). Teaching and learning in the school science laboratory. An analysis of research, theory, and practice. In, S.K. Abell and N.G. Lederman (Eds), *Handbook of Research on Science Education* (pp. 393-431). Mahwah, NJ: Lawrence Erlbaum Associates.

Millar, R. (2004). *High School Science Laboratory: Role and Vision*. National Academy of Science, Washington, DC.

Reiser, B. J., Tabak, I., Sandoval, W. A., Smith, B. L., Steinmuller, F. & Leone, A. J. (2001). BGuILE: Strategic and conceptual scaffolds for scientific inquiry in Biology classrooms. In, S. M. Carver and D. Klahr (Eds), *Cognition and Instruction: Twenty-Five Years of Progress*. Mahwah: Erlbaum.

Vilaythong, T. (2011). *The Role of Practical Work in Physics Education in Lao PDR*. Unpublished Doctoral Thesis, Department of Physics, Umeå University, Sweden

PROFESSIONAL IDENTITY CONSTRUCTION AND SOCIALIZATION AMONG PUBLIC RELATIONS STUDENTS IN UNITED ARAB EMIRATES

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Abstract

In the UAE, economic and cultural forces have resulted in a society with a sharp imbalance of the population (about 85% ex-pats and 15% locals, or Emirati) which has led to under-representation in many fields, including public relations. One contributor to success in a field, is the development of professional identity construction and professional socialization, which can occur while in the post-secondary environment. Utilizing Gardner's (2008) framework for the development of professional socialization, this is a qualitative study of in-depth semi-structured interviews of 10 Emirati public relations students from Canadian University Dubai as a purposive convenience sample. Findings reveal that Emirati students are developing in their professional identities with strong inputs at the institutional/programmatic and faculty relational levels but are not contributing as strongly to their own development through personal/individual efforts outside the classroom. More focused efforts at this level could help Emirati public relations graduates be more prepared graduates, and better positioned for success in the field, leading to better overall representation in the field within the society. Further research into motivations would be helpful. Also, exploration into the development of mentorship programs/processes are suggested.

Keywords: Public relations, students, professional identity, socialization, UAE, education.

1. Introduction

The United Arab Emirates is a country that has experienced rapid, ongoing, and significant development, which has precipitated a high demand for ex-patriates to support the economic expansion. This has produced an imbalance in the population of about 75% expatriates to about 15% Emiratis. This leaves the local population largely under-represented across many sectors of the society, including public relations. Emiratization, a type of affirmative action program, was instituted by the UAE in 2000 to address this imbalance, but the effectiveness of the program has been questioned (Al-Waqfi & Fanorstenlechner, 2014). Additionally, many Emirati tend toward public sector employment, but opportunities are limited and unemployment among Emiratic is rising (Harry, 2007; TANMIA, 2004; Simpson, 2012; Croucher, 2014). Emirati only comprise about 1% of the private sector (Al-Waqfi & Forstenlechner, 2014; Croucher, 2014). Emiratis need to be as skilled and as prepared as possible for employment, particularly in the private sector, if they wish to combat rising unemployment among their numbers, and also if they wish to retain meaningful involvement and control over their own economy as minorities in their own country (Al-Ali, 2008).

The field of public relations is an increasingly popular career choice by Emirati and a top-growth industry in UAE (Arabian Business, 2018). It is offered in about seven institutions of higher education in UAE as a baccalaureate degree, and there are also many professional programs offered by industry. Public relations has been cited as a "profession [that is] badly needed to meet the challenges of economic, political and cultural globalization," such as is occurring in UAE, and that, while the field faces ongoing developmental challenges, "there is nowhere in the globe that having it [public relations] …. is more important than in the Middle East" (Kirat, 2006, p. 259). Many Emirati are enrolled in these programs. If Emirati are to take up meaningful public relations positions in the society, particularly in the private sector, they will need to be competitive candidates for employment.

One contributor to success in a field, is the development of professional identity construction and professional socialization, which can occur in the post-secondary experience (Tajfel & Turner, 1979). To evaluate the level and process of professional socialization and professional identity construction among Emirati public relations students, this study adapts Gardner's (2008) framework for professional

socialization (i.e. occurring through *institutional*, *relational*, and *personal/individual* inputs) to determine the development, likely readiness, and possible future success of Emirati public relations students for employment in their field.

2. Literature review

Professional identity can be defined as a set of beliefs, values, and experiences characterizing a group of individuals practicing in the same profession (Ibarra, 1999; Tuluas & Gokturk, 2017). The construction of a professional identity allows individuals to adhere to a particular community with whom they share "a common approach to a particular type of work" (Van Maanen & Barley, 1984, p. 5). Strong and clear *professional identity* has been associated with positive professional outcomes (Tajfel & Turner, 1979).

Professional socialization, a closely-related concept, is "the key period within which individuals begin to form identification with their profession" (Caza & Creary, 2016, p. 15). The socialization process relies on inputs from various sources including the following: discipline-based theories and concepts; practical skills and knowledge; and reflective knowledge involving intuitive and analytical thinking about experiences and beliefs (Sutherland & Markasuskaite, 2012). Creativity, self-motivation, and self-management have been named in the public relations literature as particularly important in public relations career success (Berger, Reber, & Heyman, 2007).

Gardner (2008) provides a framework of inputs that contribute toward professional socialization (and thereby professional identity construction) of students into a profession as follows: a) the *programmatic* processes offered by the educational institution such as coursework; b) *relationships* with peers, faculty, and other academic professionals; and c) *individual/personal* processes. This framework has previously been used on a study of the professional socialization of public affairs doctoral students (see Smith and Hatmaker, 2014). Gardner's framework was adapted for use in this study. This study seeks to evaluate the overall state of professional identity construction and professional socialization in Emirati PR students in the United Arab Emirates.

3. Research questions

*RQ2: How is the **organization** contributing to the development of the Emirati public relations student and how can it possibly improve?*
*RQ3: How are PR **faculty** contributing to the development of the Emirati public relations student and how can they possibly improve?*
*RQ4: How are Emirati public relations **students** contributing to their own professional socialization and development and how can they possibly improve?*

4. Methods

A purposive convenience sample was drawn from among the public relations students at Canadian University Dubai, January – April, 2017, where the authors were serving together as professors. Emirati students were identified and approached in-person about the study, according to the preference of the culture, and invited to participate (Hurreiz, 2002). They also were encouraged to share the opportunity with their friends and the study sample was built through snowball technique (Broom & Dozier, 1990). This process yielded 10 subjects who completed the entire process. While there has been much debate about the proper number of subjects for qualitative study, six has been considered an acceptable number, including one study of eight Emirati women (Miles & Huberman, 1994; Morse, 1989; Williams, Wallis, & Williams., 2013). Participants included one first-year student, three second-year students, three third-year students, and three fourth-year students. Five were female, and five were male. Ages ranged from 19 to 43.

Students were guided through the consent process. They were offered the choice to be interviewed by a male or female, and their choice of English or Arabic. Students were offered confidentiality. Questions were formulated to elicit in-depth information on perceptions related to the socialization and professional identity construction inputs by a) the *organization* (examining satisfaction with courses, internships, etc.), b) *faculty* (examining quality of relationships, guidance, assistance, support provided by faculty), and c) the *subjects* (examining what initiatives students took for their own development), themselves, using Gordon (2008) as the base. Interviews lasted from 30 minutes to one hour. Interviewees took notes or audio-recorded interviews with student permission. Interviews that were conducted in Arabic were translated into English, and transcripts of all interviews were produced. Transcripts were analysed qualitatively by all four researchers through open coding for themes, comparing results and using a grounded theory approach (Corbin & Strauss, 2007; Glaser & Strauss, 1997; Strauss & Corbin, 1998). Researchers engaged in discussion to come to agreement.

5. Findings and discussion

Canadian University Dubai was established in 2006 as a private institution. Its education is based on Canadian curriculum and it has about ten partnerships with colleges and universities in Canada, advertising itself as a "portal to Canadian higher education" (Canadian University Dubai, 2017). The majority of students in the public relations program have been Emirati, at about 59%. This suggests there is healthy interest in the field by the locals.

Figure 1. Numbers of Emirati vs Non-Emirati Students Enrolled in PR Program, CUD, 2012 – 2016. Source: Enrolment Services, CUD.

Date	Total # of PR students	# of Emirati	# of Non-Emirati	Percentage of Emirati
Fall 2012	174	106	68	60.9%
Fall 2013	327	215	112	65.7%
Fall 2014	347	220	127	63.4%
Fall 2015	369	208	161	56.4%
Fall 2016	311	146	165	46.9%
	1,528	895	633	58.6%

Consistent with past studies, however, there remains, among Emirati, a preference for public sector work versus private sector work. Most of the students, and particularly the males, indicated that they are either currently working in, or headed for a career in the public sector, naming such places as *Immigration*, *Civil Defense*, *Dubai Police*, *Office of the Sheikh*, *Dubai Community Development Authority*, *Dubai Customs*, and *Mubadala* (a state-owned national wealth fund). Such aspirations pose a possible barrier to ultimate public relations career success in light of literature that suggests public sector employment opportunities are shrinking, and the effects of the government's Emiratization policy are limited.

Overall, students are gradually socializing into the profession and building a professional identity. Most notably, PR professional identity and socialization is supported (to some extent) at the *institutional* level (program and courses). Students positively named course work, internships, field trips, graduation project, and captsone project as positive. This academic foundation shapes their overall set of professional beliefs, values, and experiences into the profession of public relations, which is positively associated with professional identity construction (Ibarra, 1999; Tuluas & Gokturk, 2017).

At the *relational* level, students report strong and positive relational ties with faculty, saying "everyone is helpful," and "everyone is nice." Positive professional experiences and interactions are also associated with construction of professional identity (Beijaard, Meijer, & Verloop, 2004; Dutton, Roberts, & Bednar, 2010). Students noted that faculty were also helpful in providing networking opportunities by bringing speakers to class, and by organizing field trips for students. The only improvements that were suggested here was for professors to provide more networking opportunities, "whatever the form or method." The idea of developing a mentoring program for students holds some possibilities. While, when this idea of mentoring was presented to a student, s/he was unaware of what that meant in the context of public relations education. Certainly, students cannot discuss things of which they are unaware; however, the question poses some interesting thoughts and possibilities for implementation in a society with a highly relational culture as the Arabic culture. This would expand public relations students' opportunities for socialization into the profession through relationship (see Lankau & Scandura, 2007), thereby additionally contributing to professional identity construction.

The area that showed the greatest limitations to development of professional socialization and construction of professional identity was on the personal, *individual* level, i.e. by the students themselves. While the development of professional knowledge and skills from programmatic inputs is central to professional identity construction, and relational inputs also play an important role, professional identity development is not limited to these; individual self-inputs also play a role (Gardner, 2008). Students seemed to recognize the value of self-inputs, but also consistently admitted it as an area of weakness. While two subjects indicated they had been known to do an occasional free online course, and only one said she attended networking events regularly, most of the students admitted they were not investing significantly in their own professional development as individuals. One said that while she attended networking events, she "really didn't do anything." One said she wanted to improve her writing skills and felt that she should look for additional writing classes, but admitted she had not taken any action on that. One indicated she did some volunteer work, but that it was "in the past." One said she "intended" to take more specialized training elsewhere, but hadn't yet. Students tended to rely on the required internship

experience and any provided class field trips for practical training and development. Inputs on the individual level, outside of required course work, were quite limited, even though students recognized such inputs as potentially valuable. Also, effects of cultural patriarchy became evident as there was comment by a female participant that her decisions and any possible future career in public relations would be determined by her father.

6. Conclusion

Collective professional identity is being formed through course work, shared experiences, and relational supports, but the process of personal professional identity construction is not fully exploited if students are not contributing aspects of their personal identity towards professional socialization. This may also hinder the process of adherence to their public relations community, the reflection piece of the process of professional socialization process that contributes to professional identity construction (Caza & Creary, 2016). Additionally, the effects of patriarchy reveal themselves; female students can be either encouraged or hindered in their self-development and their choices, depending on the decisions of the male head of the household (see Williams, et al., 2013). The true challenge emerging as a result of this inquiry appears to be occurring at the individual level i.e. student agency and proactivity. Also, because self-motivation and self-management has been named as a key ingredient to public relation success, this becomes particularly relevant (Berger, Reber, & Heyman, 2007). Lack of student agency could be because the educational culture and system veer towards "spoon-feeding" and the less critical, reflecting a cultural norm of conflict avoidance. In light of this finding, it would seem fruitless for the institution, or faculty, to provide an additional self-development opportunities that the students suggested, such as outside training workshops, or more networking opportunities, unless such opportunities were woven into the coursework as required activities since students do not appear to be taking advantage of these opportunities.

In summary, overall, the process of professional socialization and professional identity construction is occurring, particularly at the *institutional* and *relational* levels, but there is opportunity for greater development and capacity to occur at the *individual* level, which is especially critical in a field like public relations.

7. Limitations and further research

While this is a study of a very focused group of students at a particular university and results are not generalizable, the trends and suggestions that manifest themselves can be taken under consideration for other applications: Does the trend exist with other Emirati in other PR programs in UAE? Does the trend exist with other Emirati in other programs? Also, this framework can be applied in other settings and contexts where post-secondary student achievement is particularly important for key reasons.

Investigation into the specific barriers and possible ways to motivate students toward contributing more strongly toward the process of construction of their own professional identities at the *individual* level would be beneficial. Lastly, exploration into providing structured mentorship programs could be undertaken as a potentially positive and effective *relational* input into UAE public relations students' professional identity development.

References

Al-Ali, J. (2008). Emiratisation: Drawing UAE nationals into their surging economy. *International Journal of Sociology and Social Policy, 28*(9/10), 365 – 379.

Al-Waqfi, M.A., & Forstenlechner, I. (2014). Barriers to Emiratization: The role of policy design and institutional environment in determining the effectiveness of Emiratization. *International Journal of Human Resource Management, 25*(2), 167-189. doi: 10.1080/09585192.2013.826913

Arabian Business. (2018). *UAE's top growth industries.* Retrieved May 13, 2018, from http://www.arabianbusiness.com/uae-s-top-growth-industries-394697.html?itemid=394684

Beijaard, D., Meijer, P.C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and Teacher Education*, *20*, 107–28.

Berger, B. K., Reber, B. H., & Heyman, W. C. (2007). You can't homogenize success in communication management: PR leaders take diverse paths to top. *International Journal of Strategic Communication*, *1*(1), 53-71.

Broom, G.M., & Dozier, D.M. (1990). *Using research in public relations: Applications to program management.* Englewood Cliffs, NJ: Prentice Hall.

Canadian University Dubai. (2017). Discover Canadian University Dubai. Retrieved December 17, 2017, from https://www.cud.ac.ae/

Caza, B. B., & Creary, S. J. (2016). The construction of professional identity. In A. Wilkinson, D. Hislop, & C. Coupland (Eds.), *Perspectives on contemporary professional work: Challenges and experiences* (pp. 259-285). Cheltenham, UK: Edward Elgar Publishing.

Corbin, J., & Strauss, A. (2007). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage.

Croucher, M. (2014, March 27). Unemployment rates among young Emiratis has increased but national service can help. *The National*, Retrieved December 20, 2017, from https://www.thenational.ae/uae/government/unemployment-rates-among-young-emiratis-has-increased-but-national-service-can-help-1.325997

Dutton, J.E., Roberts, L.M., & Bednar, J.S. (2010). Pathways for positive identity construction at work: Four types of positive identity and the building of social resources. *Academy of Management Review, 35*, 265-293.

Gardner, S.K. (2008). "What's too much and what's too little?" The process of becoming an independent researcher in doctoral education. *Journal of Higher Education, 79*(5), 326-350.

Glaser, B.G., & Strauss, A. (1997). *Grounded theory in practice.* Thousand Oaks, CA: Sage.

Hammer, D. (2006). Improving student professionalism during experiential learning. *American Journal of Pharmaceutical Education, 70*(3), 59.

Harry, W. (2007). Employment creation and localization: The crucial human resource issue for the GCC. *International Journal of Human Resource Management, 189*(1), 132-146.

Hurreiz, S. (2002). *Folklore and folklife in the United Arab Emirates.* New York: Routledge Curzon.

Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly, 44*(4), 764-791.

Kirat, M. (2006). Public relations in the United Arab Emirates: The emergence of a profession. *Public Relations Review, 32*(3), 254-260. doi:10.1016/j.pubrev.2006.05.006

Lankau, M.J., & Scandura, T.A. (2007). Mentoring as a forum for personal learning in organizations. In B.R. Ragins & K.E. Kram (Eds.), *The handbook of mentoring at work: Theory, research and practice* (pp. 95-122). Thousand Oaks, CA: Sage.

Miles, M., & Huberman, A.M. (1994). *An expanded sourcebook of qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage.

Morse, J.M. (Ed.). (1989). *Qualitative nursing research: A contemporary dialogue.* Newbury Park, CA: Sage.

Pinkham, D. (2004). What it takes to work in public affairs and public relations. *Public Relations Quarterly*, *49*(1), 15.

Simpson, C. (2012, March 4). Call for special centres to support Emiratis once in private sector. *The National,* pp. 6-7.

Smith, A.E., & Hatmaker, D.M. (2014). Knowing, doing, and becoming: Professional identity construction among public affairs doctoral students. *Journal of Public Affairs Education, 20*(4), 545-564.

Strauss, A., & Corbin, J. (1990). Grounded theory research: Procedures, canons and evaluative criteria. *Qualitative Sociology, 13*(1), 3-21. Retrieved from https://doi.org/10.1007/BF00988593

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research.* Thousand Oaks, CA: Sage.

Sutherland, L., & Markasuskaite, L. (2012). Examining the role of authenticity in supporting the development of professional identity: an example from teacher education. *High Education, 64* (747-766).

Tajfel, H., & Turner, J.C. (1979). An integrative theory of intergroup conflict. In W.G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33-48). Monterey CA: Brooks/Cole.

TANMIA. (2004). *Employment and human resource report. Part one. Towards a strategy for enhancing wage employment of UAE nationals in the private sector.* Ministry of Labour and Social Affairs, UAE.

Tuluas, T., & Gokturk, S. (2017). An evaluation of academic training program (OYP) from professional socialization and identity perspective. *Journal of Education and Practice, 8*(13), 14-20.

Van Maanen, J., & Barley, S.R. (1984). Occupational communities: Culture and control in organizations. *Research in Organizational Behavior, 6*, 287-365.

Williams, A., Wallis, J., & Williams, P. (2013). Emirati women and public sector employment. *International Journal of Public Administration, 36*(2), 137-149. doi: 10.1080/01900692.2012.721438

ACADEMIC PERFORMANCE AS AN INDICATOR OF STUDENTS' PREPAREDNESS FOR UNIVERSITY STUDY: A CASE OF PHYSICS

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Abstract

The articulation gap between school and higher education within the South African context remains a contentious issue reflected upon as an integral part of scholarly debates. The standardization of assessment outcomes is not viewed in a positive light as it is perceived to encourage grade inflation. Grade inflation is largely regarded as a negative factor eroding the quality of assessment outcomes for students intending to enroll for university studies. In response to this key imperative, the academic performance of first year physics students at a South African university was tracked as a function of their input characteristics. While the students achieved satisfactory results in mathematics and physical science in the National Senior Certificate Examination, this achievement could not translate into commensurate satisfactory academic performance in the Mathematics, Science, Engineering and Technology programs offered by institutions of higher learning. In particular, analysis of the academic performance in physics revealed that students struggled with physics course content. This unpalatable reality signifies that students come to the study of physics at university with varying levels of content knowledge gaps subsumed within standardized assessment outcomes. This scenario can partly be attributed to the impact of grade inflation occurring as part of standardization of assessment outcomes by the Quality Assurance Council. Implications for provision of higher education are discussed.

Keywords: Articulation gap, standardization, assessment outcomes, grade inflation.

1. Introduction

The articulation gap between school and higher education in South Africa poses enormous challenges to the provision of instruction particularly in the mathematics, science, engineering and technology arena. The standardization of assessment outcomes by the Quality Assurance Council in the general and further education training bands exacerbates the complexity of the articulation gap resulting in institutions of higher learning adopting various strategic interventions to adequately deal with student under-preparedness for tertiary studies. The key mandate of the Quality Assurance Council is to ensure that the provision of education and training is carried out in accordance with expected standards of quality (General and Further Education and Training Act, 2001). More specifically, the standardization process is underpinned by processes needed to mitigate the effect of factors other than learners' knowledge and aptitude on learners' performance. The standardization of assessment outcomes is not viewed in a positive light as it is perceived to encourage grade inflation. Grade inflation is largely regarded as a negative factor eroding the quality of assessment outcomes for students intending to enroll for university studies.

Extended curriculum programs have been implemented by institutions of higher learning to maximize the academic experience of students with a view to subsequently enhance their academic performance. Satisfactory achievement levels from the National Senior Certificate Examination do not necessarily translate into satisfactory student academic performance in the mathematics, science, engineering and technology programs offered by institutions of higher learning. Inadequate academic performance has increasingly necessitated the adoption of various remedial interventions as an integral part of the extended curriculum programs. It is against this background that the academic performance of first year physics students at a South African university was tracked as a function of their achievement levels from the National Senior Certificate Examination as input characteristics.

2. Research design and methodology

This study adopted a cohort design as it involved participants who are united by some commonality or similarity (Healy & Devane, 2011). The cohort consisted of first year physics students enrolled for a Degree Program in Electrical Engineering ($n = 176$) in 2017 at a South African university. The academic performance of the students in a Physics I Module was tracked as a function of their input characteristics. Achievement levels in Mathematics and Physical Science were used as input characteristics. The students constituted a purposive sample within the context of this study.

3. Results and discussion

The Curriculum and Assessment Policy Statement (DBE, 2012) is underpinned by an assessment criteria based on the achievement levels provided in Table 1 below.

Table 1. Achievement levels.

Achievement Levels	Description of Competence	Percentages
Level 7	Outstanding achievement	80%–100%
Level 6	Meritorious achievement	70%–79%
Level 5	Substantial achievement	60%–69%
Level 4	Moderate achievement	50%–59%
Level 3	Adequate achievement	40%–49%
Level 2	Elementary achievement	30%–39%
Level 1	Not achieved	0%–29%

Figures 1 and 2 below illustrate achievement levels in Mathematics and Physical Science obtained by the students in the National Senior Certificate Examination, respectively. A substantial number of students achieved levels 4 and 5 in Mathematics and Physical Science.

Figure 1. Achievement levels in Mathematics.
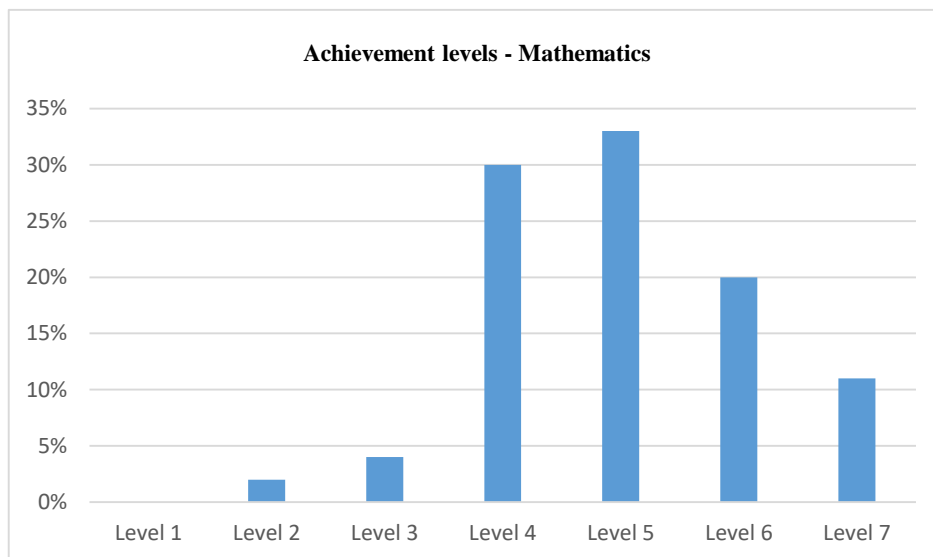
Figure 2. Achievement levels in Physical Science.
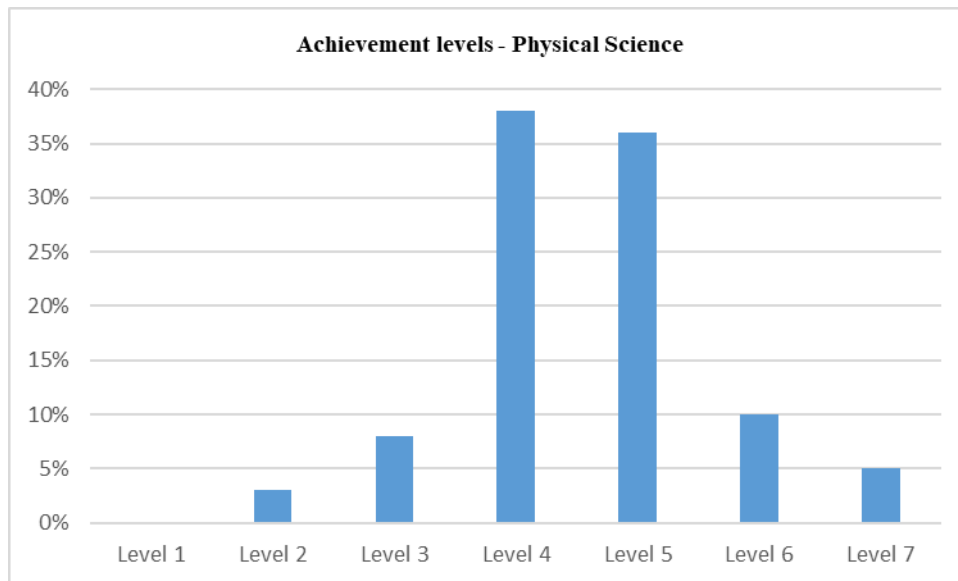
Figure 3 below provides the breakdown in terms of the overall Physics academic performance of the students at university. The inadequate overall Physics academic performance at university was not consistent with the achievement levels obtained in the National Senior Certificate Examination. The overall Physics academic performance of a considerable number of students fell within the 30% - 39% band. This scenario can partly be attributed to the impact of grade inflation occurring as part of standardization of assessment outcomes by the Quality Assurance Council. A research study conducted by Nel and Kistner (2009) revealed that grade inflation occurred particularly in the results of the lower performance group.

Figure 3. Overall Physics academic performance at university.
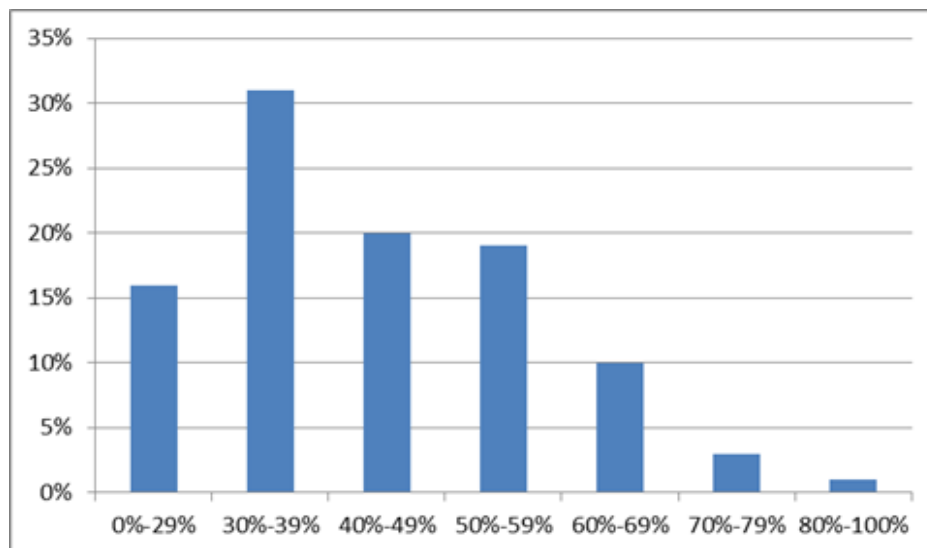
Figure 4 below depicts the global performance of the students in Mathematics and Physics at university. 49% of the students passed Mathematics and Physics and 51% failed Mathematics and Physics. This inadequate academic performance was essentially inconsistent with their achievement levels in the National Senior Certificate Examination. In addition, the inadequate academic performance undercores the significance of mathematical competency as a key requirement for academic success in physics studies.

Figure 4. Global academic performance in Mathematics and Physics at university.
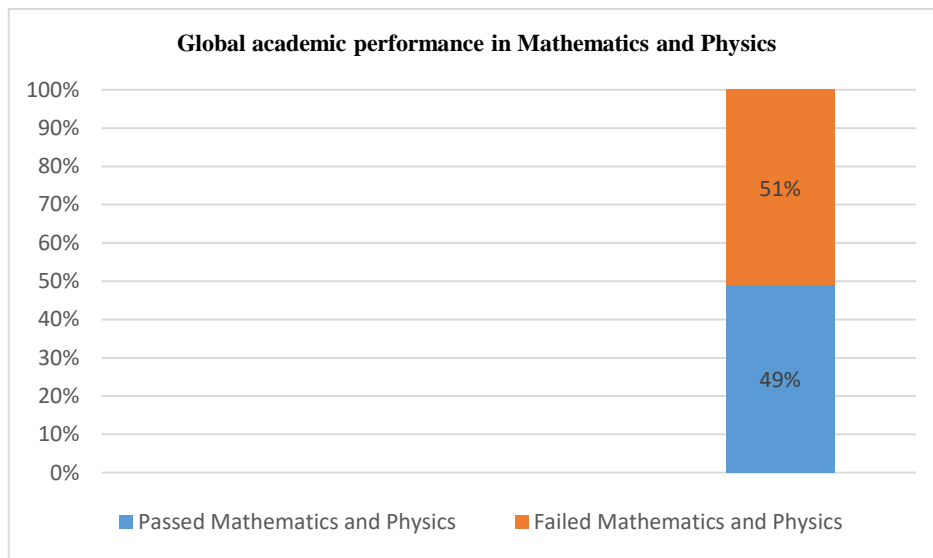
Concerted efforts are required for meaningful improvement of science and mathematics education in South Africa for purposes of accelerating socio-economic development through the enhancement of human capital development. Competitive levels of economic growth are intrinsically linked to the quality of human capital development and this key imperative hinges to a large degree on coordinated efforts geared towards the development of scientific and mathematical literacy. The qualitative improvement of learner performance particularly in mathematics and science as gateway subjects requires reprioritization of continuing teacher professional development with a view to bridge the articulation gap between school and higher education. The basic and higher education sectors ought to critically interrogate the complexity of the articulation gap and provide sustainable solutions for the improvement of operational efficiency that would serve to maximize the academic experience of students. This mission can be accomplished through adequate investment in the development of improvement plans leading to meaningful curriculum reform. There is a crucial need for examination papers to assess the acquisition of core skills such as performance of complex procedures and problem-solving to a significant extent. In addition, assessment opportunities ought to provide appropriate platforms for the development of intellectual capacity to ensure that learners are able to cope with the cognitive demands of the curriculum.

Recognising the need for meaningful enhancement of human capital development and the complexity of the articulation gap between school and higher education, the Council on Higher Education (CHE) launched a proposal for undergraduate curriculum reform in South Africa (CHE, 2013). This proposal was largely informed by a comprehensive set of data cutting across various disciplines forming an integral part of the academic programs offered by South African higher education institutions. However, the proposal for undergraduate curriculum reform in South Africa failed to gain traction due to lack of financial resources required for implementation. The South African Institute of Physics (SAIP) in partnership with the Council on Higher Education produced a report on the review of undergraduate physics education in public higher education institutions in South Africa (SAIP & CHE, 2013). One of the key recommendations emanating from the report states that a four-year Physics undergraduate program should be adopted and this is commensurate with the need for meaningful improvement of science and mathematics education within the broader South African context.

4. Conclusions

This study revealed the disparity between National Senior Certificate Examination achievement levels and the subsequent academic performance in a higher education instructional setting. Higher education institutions within the South African context are faced with the imperative to put in place strategic interventions through which student under-preparedness for tertiary studies could be adequately addressed in a sustainable manner while taking cognizance of the complexity of the articulation gap between school and higher education.

References

Council on Higher Education (CHE). (2013). *A Proposal for Undergraduate Curriculum Reform in South Africa: The Case for a Flexible Curriculum Structure*. Pretoria

Department of Basic Education (DBE). (2012). *Curriculum and Assessment Policy Statement*. Pretoria.

Department of Education (DoE). (2001). *General and Further Education and Training Act, 2001*. Pretoria

Healy, P & Devane D. (2011). Methodological considerations in cohort study designs. *Nurse Researcher,* **18,** 32-36.

Nel & Kistner, (2009). The National Senior Certificate: Implications for access to higher education. *South African Journal of Higher Education*, **23**(5), 953-973.

South African Institute of Physics (SAIP) & Council on Higher Education (CHE). (2013). *Review of Undergraduate Physics Education in Public Higher Education Institutions*. Pretoria.

WORKING EMOTIONS WITH ASD STUDENTS: DEVELOPING EMOTIONAL SKILLS WITH EDUCATIONAL SOFTWARE

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Abstract

ICT tools are changing our society. The vast majority of our daily activities are subject to its influence. This element of change can be used to respond to existing diversity. As a result, in our study educational software is used to help ASD students to develop emotional skills. We have worked with six students with ASD between seven and ten years old. Three of them formed the control group and the rest of the sample was experimental group. Moreover, all the users had language delay. It has been studied with a Pretest situation to know the starting point of our study. The length of the session in Experimental and Control Group was 30 minutes during 3 months. It has been done two sessions per week. At the beginning of the session the objectives were stablished. Furthermore, two groups made the same activities but one of them used educational software and the other traditional methodologies. The educational software fixed five difficult levels. In addition to this, they are focused on diversity of ASD lack of skills. Finally, a Posttest situation is produced to know the improvement of the students. Our results have shown slightly improvement on emotional skills. It is due to the size of the sample and the period of study. In the future we would like to complete this software with more complex and real situation.

Keywords: Emotion, ASD students, educational software, technology, emotional skills.

1. Introduction

Nowadays, technology is one of the most import elements in our lives. Everybody has different tools to do diary activities such as chat with her friends, review his emails. Nobody wants to live without technology. One of the areas where it have been applied is Education. Our classroom present diversity of students. Therefore, as a teachers we need to respond to their needs. Technology can be an interesting tool to achieve this aim. The objective of our study is to improve emotional skills in some specific disability like Autism Spectrum Disorder using a special software.

As a starting point APA (2013) define Autism Spectrum Disorder as an incorrect behavior in communication and social interaction, restricted interest and activities. What's more they have a lot of problems in social situations. In the same way, Matson & Rivet (2007) conclude that students with ASD have different problems in emotional skills. For example understand the reactions of the other people using facial features (Baron-Cohen, 2003). In addition to this, Baron-Cohen (2008) has found a new concept called empathy. This term is very useful to understand how students with ASD work with emotions. According to Baron-Cohen (2008), it is the aptitude to think up what the other people is thinking or feeling. More specifically, is the skills that allow to decode the facial expression in the specific social situation (Sawyer, Williamson & Young, 2012). What's more, this deficit is produced due to the problems of recognizing non-verbal expressions (Wallace et al. 2008)

Taking as a reference this features, we can conclude that students with ASD are a supporters of using technology which can be a powerful educational tool (Chen & Bernard-Opitz, 1993; Moore & Calvert, 2000). Likewise, Standen & Brown (2006) demonstrate that Technology allows students to understand their own mistakes without suffering the effects produced by the real world. According to Lorenzo, Lledó, Pomares & Roig (2016), visual processing of this students can be worked as an advantage to use technology to increase emotional skills.

2. Method

In this section, we are going to study which the steps have been to implement our methodology. Firstly, the reader can observe the features of the participants. Moreover, it has been shown which criteria has been selected. After that, the instrument has been explained. Finally, the design and procedure of our methodology have been analyzed. However, we cannot forget the objectives of our research:

- To develop emotional skills with ASD students with the use of Emociona-TIC educational software.
- To assess the learning teaching process in the intervention of students with ASD.
- To check the evolution of emotional skills with ASD students.

2.1. Participants

We have worked with two groups; control and experimental group. The experimental group has been formed by tree students. The average age was 8.5 and all the students had been diagnosed with Autism Spectrum Disorders and language delay. The control contained three students with average age 9.Moreiver they have been identify with Autism Spectrum Disorders and language delay. What's more, all the children in the study are attending in public school system, included in regular education classroom.

2.2. Instrument

In this section it is going to be studied the instruments used in our research. Firstly we would work with an application divided in two parts. One of the sections contain a guide for adults, where it explains the characteristic of emotions with visual support. The other part would focus on a complete training of the teaching basic emotions though five steps:

- Emotion recognition from photographs
- Emotion recognition from schematic drawings
- Emotion recognition based on the situation
- Emotion recognition based on desire
- Emotion recognition based on belief

Taking as a reference this steps, they were designed these tables where the researchers could gather information about the emotion recognition. The information about steps 1, 2 has been picked up using the same table (Table 1). For steps 4, 5, the user put into effect similar tables. In step 4 were chosen for emotion-situation. In the same way, in step 5 the students could only study three situations.

Table 1. Emoiions level I and II.

Emotions	Answer	Observations
Joy		
Fear		
Anger		
Disgust		
Surprise		
Sadness		

Table 2. Emoiions level 1II.

Emotions	Answer	Observations
Situation of Joy		
Situation of Fear		
Situation of Anger		
Situation of Disgust		
Situation of Surprise		
Situation of Sadness		

2.3. Design

In this section is going to be explained the activities used in our research. The methodology used was inclusive, participatory where all children are interacting with their learning. Therefore, it has been created five different types of activities.

- Activity 1. It tries to relate photographs according to the emotion expressed. The teacher points out the big picture and asks the student, how is he or she doing. The student gives an oral answer. The teacher explains that she has to touch on the photograph on the right that expresses the same emotion as the big picture. When the child gets the emotion right, he receive an award from the software.
- Activity 2. It tries to match the emotions that are the same. Emotions are represented in drawings. A large drawing in the center is the emotion we want to associate with one of the six that lie below in smaller size.
- Activity 3. The task of the student is to identify emotion from a given situation. The teacher reads the situation and accompanies the reading by pointing out pictograms, which visually help to understand the situation. The teacher then asks the student: "How do you feel? The student will have to click on the corresponding emotion.
- Activity 4. It consists of two situations in which a subject wants something in the first picture; besides they achieved the aim in the second picture. Moreover, the student identifies emotion by empathizing with the subject of the text. The teacher explains the situation and offers the student an alternative answer. The evaluation system is similar to the previous levels.
- Activity 5. In this activity the student must identify the emotions of happiness or sadness according to reality, desire, belief and emotion.

2.4. Procedure

At the beginning of the research, it has be done a pretest probe where the researchers can check the previous skills of the students. In this activity the teacher explain how the software works. After that, Experimental group started to work with the diverse task, during 3 months, two sessions per week. Each activity had to be repeated once in a week. Until the task wasn't learnt the student didn't pass to the next situation. Using the same diagram, the control group do the same situations but using video recordings. Moreover, the evaluation system was the same. In the end of the research we make the equivalent task that we done at the beginning. The aim was to know the improvement of emotional skills in this students.

3. Results

The aim of this section is to analyze the results that we have obtain in our study. Table 1, try to show the correct answer of control and experimental group according to the different levels of difficulty. In addition to this, Table 2 explain the evolution of correct answers over the weeks in the different groups.

Figure 1. Correct answers according to the different levels of difficulty.
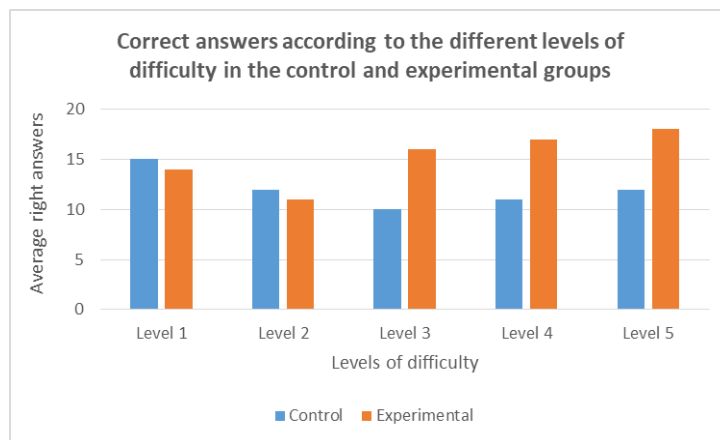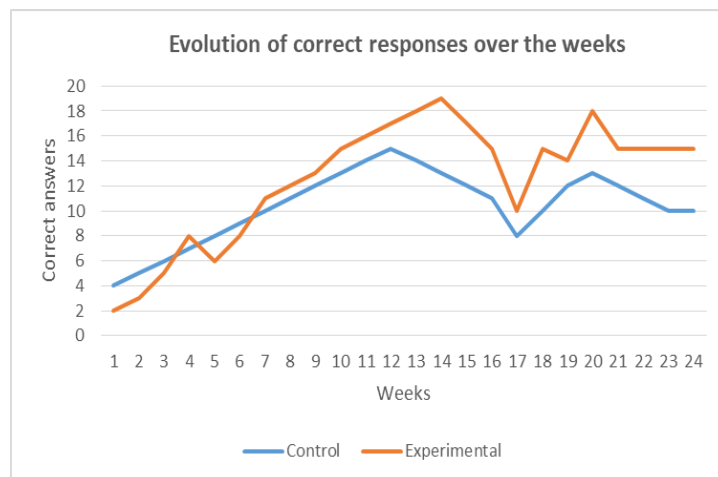
Figure 2. Correct answers evolution over the weeks.

4. Discussions

The aim of this section is to analyse the results presented previously. In figure 1 it can be seen how experimental and control group have similar behavior on the first three levels. It is due to the type of activity. The first three task are simple and the students can work with easy emotions. Moreover, students with ASD have not problems to identify this emotions. However, the last two levels are more complex and therefore the use of the software facilitates the recognition of emotions. This event does not occur with the control group that uses video recordings. It is produce due to the realism of images in experimental group.

In contrast, in figure 2 experimental group produce an improvement in emotional skills after seventh week. After that, experimental present an evolution in correct answers of emotion recognition. It is generated because they can repeated the activity once a month. This situation has been considered in other research such as Lorenzo, Lledó, Roig (2016). Furthermore, experimental suffer an increase because the students can interact with the activity (Wallace et al. 2008)

5. Conclusions

It is going to summarize the achievement in our research that have been obtain according to the results of the previous section.

- The students with ASD have not got problems to identify basic emotions; however they suffer diverse deficit when they need to associate an emotion with a situation.
- Information and Communication Technology (ICT) are a useful tool to improve emotion skills.
- The repetition of the activity helps students to generalize it.
- The software has been adapted to the age range of the students.
- The difficulty of the proposed activity has been a determining factor when working with students with ASD.
- More participants would be needed in addition to working with them more time.
- Although the students have suffered different adaptation problems with the software they have enjoyed working with it.

References

American Pschiatric Association. (2013) *Diagnostic and Statistical manual of mental disorders* (5th Ed.). Washington, DC: USA.

Baron-Cohen, S. (2008). Autism, hyper systemizing, and truth. *The Quarterly Journal of Experimental Psychology, 61*(1), 64-75. Doi: http://dx.doi.org/10.1080/17470210701508749.

Chen, S., & Bernard-Opitz, V. (1993).Comparison of personal and computer-assisted instruction for children with autism. *Journal of Mental Retardation, 31*(1), 368-376.

Lorenzo, G., Lledó, A., Pomares, J., & Roig, R. (2016). Design and application of an immersive virtual reality system to enhance emotional skills for children with Autism Spectrum Disorders. *Computers and Education, 98* (1), 192-205. Doi. 10.1016/j.compedu.2016.03.018

Matson, J., Matson, M., Rivet, T. (2007). Social- Skills treatments for children with autism spectrum disorders. Behaviour Modification, 31(5), 682-707. Doi. 10.1177/0145445507301650

Moore, M., & Calvert, S. (2000). Brief report: vocabulary acquisition for children with Autism: teacher or computer instruction. *Journal of Autism and Developmental Disorders, 30* (4), 359-362. Doi. 10.1023/A: 1005535602064

Standen, P., & Brown, D. (2006). Virtual reality and its role in removing the barriers that turn cognitive impairments into intellectual disability. *Virtual Reality, 10*(3), 241–252.

Sawyer, A., Williamson, P., & Young, R. L. (2012). Can gaze avoidance explain why individuals with Asperger's syndrome can't recognise emotions from facial expressions? *Journal of Autism and Developmental Disorders, 42*(4), 606e618. http://dx.doi.org/10.1007/s10803-011-1283-0.

Wallace, S., Coleman, M., & Bailey, A. (2008). An investigation of basic facial expression recognition in autism spectrum disorders. *Cognition and Emotion, 22*(7), 1353e1380. http://dx.doi.org/10.1080/02699930701782153

INFANT SCHOOL DEGREE STUDENTS' PERCEPTION OF THE FLIPPED CLASSROOM MODEL

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Abstract

This study presents a quasiexperimental design of the flipped classroom model in the subject of School Organization: time, space, means and resources as part of the Degree in Infant School Education at the University of Jaén. A total of 152 students participated in the study; of this total, 119 students implemented the flipped classroom method (EG) and 33 students continued with traditional classes (CG). The main objectives were to find out what students' perceptions were regarding the application of this model and confirm if any differences exist in the learning results obtained by both groups. Results show keys relevant to theoretic argument, as well as to the experience itself both before and after it was carried out. The conclusions of the study based on the two instruments designed reveal progress in the use of collaborative learning in both groups, with the flipped classroom group presenting a higher valoration. With reference to the implementation of the model, an increase in the teachers' workload and the effort undertaken by the students stands out, underlining the students' competence in the average marks obtained.

Keywords: Flipped classroom, ICT, teaching practice, teacher education.

1. Justification

The configuration of the European Higher Education Area (EHEA) has produced a change in the current educational paradigm with the incorporation of innovative pedagogical models which favour the use of new methodologies in Higher Education. Thus, within the 2020 European Strategic Framework, the introduction of the flipped classroom model in university teaching is contemplated in order to see the impact of its application in the classroom.

In the latest edition of the Horizon report (Adams, Cummins, Davis, Freeman, Hall & Ananthanarayanan, 2017), in short term tendencies, the importance of mixed learning is underlined -a combination of online and on-site training-. From adaptive learning with flipped classrooms to the incorporation of online learning modules; mixed learning designs are gaining ground since they benefit students by reorganizing the time employed in the classroom to promote more active active learning and collaboration.

According to Llorens (2012), the Tendency report issued by the CRUE (Conference of Spanish University Chancellors) points out that the importance of the pedagogical model comes before that of the technological model given that the focus is on learning and technology is an added value. Thereby, the importance of teaching methodologies, good practices to improve university education and the implication of students in the whole educational process is made clear. In short, it is not a case of centring learning on a technological tool but to provide diversity which allows and makes it easier for each teacher to find and create a learning environment.

Flipped classroom is a model or didactic approach created to avoid students wasting hours on contents in the classroom. Teachers record the classes on theory, students watch them before class and as a result the work in the classroom consists of doing projects to put what has been learned into practice and consolidate learning. In the studies carried out, Bergmann & Sams (2012) found improvements in students over a five-year period, not only on an individual level but also in global progress, among other things, the atmosphere in the classroom improved.

The flipped classroom model uses technology as a means to turn around the traditional structure of the teaching-learning process and is centred primarily on the students' learning process. The principal foundations of the flipped classroom are a flexible environment, which allows time and space to adjust the subject to the students and a learning culture based on the students' implication in constructing

knowledge, adapting method as the essential driving force of the learning objective (Chocarro, Santiago & Navaridas, 2015)

Implementation of the flipped classroom requires inductive methodologies such as case studies, problem-based learning, project-based learning and learning by exploration which favours its implementation in class time (Santiago, 2014). It is a challenge whose solution requires knowledge not previously provided. We are dealing with an integral approach (Bloom, Engelhart, Furst, Hill & Krathwohl, 1956), which combines direct instruction with constructivist methods, students' impliction with course content and the improvement of their conceptual understanding (Touron & Santiago, 2015). Later, further advances are made along these lines with the so called hybrid inductive methodologies such as Just In Time Teaching (Novak, Patterson, Gavrin & Christian, 1999), Peer Instruction (Mazur, 1997) or Team-Based Learning (Michaelsen, Sweet & Parmelee, 2008) where teachers receive previous information from the students on the day of the class, making adjustments and preparing strategies and activities adapted to their needs.

In Hamden, Mcknight, Mcknight & Arfstrom (2013) we find the possibilities of the Flipped Classroom model in teaching, they interviewed 403,000 students, families, teachers and administrators about the use of the model. Studies such as those carried out by Mason, Shuman & Cook (2013) or Yarbro, Mcknight & Mcknight (2014) make clear how mixed ability classes show improved results and teacher satisfaction and students imrove in autonomy, motivation and active attitude. Other studies, such as those undertaken by Finkel (2012) in a Secondary school in Michigan, show how the failure rate for maths students fell from 44% to 13% after introducing the inverse model. In our closest context, research by Tourón & Santiago (2015) presents the benefits of the use of the model for better student preparation, greater predisposition to participate, more personalised teaching, improvement in teacher-student interaction and in the progress of results.

In the university context, studies by Yungwie Lee (2016) present the level of students' preparation for the implementation of this model, which leaves room for improvement. Another study by Schneider, Wallace, Blikstein & Pea (2013) at the University of Stanford centred on the study of neuroscience through the flipped classroom. Results suggest that students are better prepared to understand a theory after exploring it for for the first time by themselves, and that tangible user interfaces are particularly well adapted for this purpose. Finally, work undertaken by Pierce & Fox (2012) reveals how the methodological change directly improved students' results.

2. Method

This current research was carried out within the framework of the subject of School Organization: time, space, means and resources, as part of the Degree in Infant School Education; it had a quasiexperimental design with two groups, one group following traditional classes (CG) and a second group in which the flipped classroom model (EG) was applied. Student participation in one or the other group was voluntary and was carried out over a period of four weeks.

A total of 152 students took part; 119 students used the flipped classroom method (EG) while 33 students continued with traditional classes (CG). The main objectives were to find out the perceptions of students of the Degree in Infant School Education at the University of Jaén regarding the application of this model and confirm if any differences exist in the learning results obtained by both groups.

The procedure followed with the experimental group was through a blog created for that purpose and the University of Jaén ILIAS platform while the control group used only the ILIAS platform. To this end, an online questionnaire was used (JITT) which consisted of eight open-ended questions based on the benefits of the flipped classroom strategy and whose results allowed the classroom tasks to be organised, planning work in small groups for debate and subsequent exposition. In this way, the exchange of information and collaboration in the resolution of problems is favoured. Once classes were finished, students completed the questionnaire online to monitor their progress and analyse the results obtained.

The organisation of the sessions was based on the previous questionnaire incorporated into the Flipped classroom (JITT) which they had access to on the blog and which had to be completed beforehand in order to understand aspects related to this experience and the topic contents (Prieto & Díaz, 2014), it also had to be completed after in order to adapt the in-class sessions. The sessions aimed to favour both individual work outside the classroom and collaborative work within, the resolution of problems and students' learning. Work was backed up by the use of ICT to facilitate the development of students' learning and the work involved in teachers' planning both on the blog and the virtual platform. Project planning was based on the work carried out by Hinojosa & Arriaga (2015) and adapted to our study.

With the aim of finding out about students' perceptions, an ad hoc questionnaire with 28 questions was developed. The questionnaire was validated by six experts (three experts in research

methodology in education and three experts in information and communication technology) to confirm that the questionnaire items were really representative of the dimensions intended to be measured. They were sent a scoresheet on which to mark from 1 to 5 the clarity, coherence and relevance of each item. The final tool contains those items on which there was complete agreement. The results of the project are taken from the two tools designed and adapted (Prieto & Díaz, 2014) for the purpose of this research and the average marks obtained by the students.

3. Results

Taking into account the results obtained, we can see that the flipped classroom model increases student motivation in both the previous activity and in the classroom context. The results obtained are presented in terms of the students' perception of the collaborative learning methodology and their academic results. It has likewise been possible to confirm that the material designed to this end in the blog was adequate, despite the limited time the project was implemented. From the teachers' perspective, it has been possible to work with the model in combination with collaborative methodology.

The results obtained on the collaborative learning scale indicate that few differences exist between and within the two groups, the experimental group showing advantages in items 1, 4, 7 and 20 with respect to the CG, regarding *reservations towards group work* (2.30/2.12); *there are discussions and ideas are exchanged when you work in a group* (4.35/4.12); *interaction with classmates increases the level of learning* (4.36/4.12) and finally in reference to *sharing acquired knowledge* (4.38/4.18).

Regarding the analysis of the academic results of those students participating in the flipped classroom model (EG) and those who opted for the methodology established in the academic guide (CG), the average results obtained in the flipped classroom group are (EG): $\bar{X}$ = 6.74 and in the group which didn't follow the flipped classroom method (CG): $\bar{X}$ = 6.40, showing significant differences between the groups, around 0.34, between the average marks obtained by students who followed the flipped classroom model and those who followed traditional classes. A deviation of 1.61 in the EG and 1.50 in the CG, indicates a greater variability in the experimental group and more uniformity in the control group made up of students who did not participate in the experimentation.

The number of students getting low marks coincides in both groups, although in the (8.9) mark interval it is true to say that the number increases in the experimental group and drops considerably in the control group.

In the JITT questionnaire questions, students have commented on the possibility of becoming familiar with other work methodologies, and expressed their opinions regarding the increase in workload, limitations in the use of ICT and the lack of experience in the new strategy.

4. Discussion and conclusions

As can be seen in this current research, success of the flipped classroom model requires students' participation and commitment in their own learning. It is true to say, however, that this interest must be fed by a dosis of motivation, teacher's enthusiasm and the use of ICT; in this way, higher thought level skills are fostered (Bergman & Sams, 2012). For this reason, activities centred on discussion, the resolution of problems, cooperation and efficient communication are essential in the classroom.

In relation to the first objective, students' perceptions revealed that, in general, they were satisfied with the flipped classroom, a result which coincides with the research done by Butt (2014), Davies, Dean & Ball (2013), De Grazia, Falconer, Nicodemus & Medlin (2012), Mason, Shuman & Cook (2013), Mclonghlin, Griffin, Esserman, Davidson, Glatt & Roth (2013) and Wagner, Laforge & Cripps (2013), who found in this model a more satisfactory approach for students' learning, regardless of its level of execution. On the other hand, students pointed out difficulties associated with its adequate implementation such as, for example, the need for greater effort than in conventional classes; the objectives and activities of the course were not clear enough and they received inadequate feedback during the activities. Likewise, these opinions confirm findings by Leis, Tohei & Cooke (2015) in relation to the increase of both teachers' and students' workload, and an increase in effort and the students' level of competence.

In response to the second objective set in this research, significant differences have been confirmed between the two groups which revealed an improvement in the understanding of concepts when multimedia materials are used. We also coincide with the authors Novillo, Fernández, Cid & Rodríguez (2015:686), when they state that the differences in marks obtained in initial and final questionnaires have been taken as guages of the impact of the Flipped Classroom on learning. We can conclude that in Higher Education, consideration is necessary on the need to reduce class ratios to favour personalisation and improvement in learning.

References

Bergmann, J. & Sams, A. (2012). Flip Your Classroom: Talk to Every Student in Every Class Every Day. *International Society for Technology in Education.* Retrieved from http://books.google.com/books?id=nBi2pwAACAAJ

Bloom, B.S., Engelhart, M.D., Furst, E.J., Hill, W.H., & Krathwohl, D.R. (Eds.). (1956). *Taxonomy of Educational Objectives. The Classification of Educational Goals, Handbook I: Cognitive Domain.* New York: David McKay Company, Inc.

Butt, A. (2014). Student views on the use of a flipped classroom approach: evidence from Australia. *Business Education & Accreditation*, 6, 1, 33-43.

Chocarro, E., Santiago, R. & Navaridas, F. (2015). Experiencias docentes basadas en el aprendizaje inverso en la Universidad. En Mendieta, A. (Coord.) (2015). Visiones docentes en las aulas. *Editorial ACCI,* 85-104.

Davies, R. S., Dean, D. L. & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course. *Education Tech Research Dev*, 61, 563-580. doi:10.1007/s11423-013-9305-6.

De Grazia, J. L., Falconer, J. L., Nicodemus, G. & Medlin, W. (2012). *Incorporating screencasts into chemical engineering courses.* Paper presented at the ASEE Annual Conference & Exposition, Atlanta, USA.

Finkel, E. (2012). Dar la vuelta al guión en K12. *District Administration.* Retrieved from www.districtadministration.com/article/flipping-guión-k12.

Hamdan, N., Mcknight, P., Mcknight, K., & Arfstrom, K. M. (2013). A Review of Flipped Learning. *Flipped Learning Network*. Retrieved from http://www.flippedlearning.org/review

Hinojosa, C. M. & Arriaga, A. (2015). Los alumnos opinan sobre la metodología flipped classroom: una experiencia con estudiantes universitarios de Grado en Psicología. Ruiz, M.A. (Eds.), *XII Jornadas Internacionales de Innovación Universitaria. Educar para transformar: Aprendizaje experiencial* (pp. 816-823). Madrid: Universidad Europea.

Adams, S., Cummins, M., Davis, A., Freeman, A., Hall Giesinger, C. & Ananthanarayanan, V. (2017). *NMC/CoSN Horizon Report: 2017 K–12 Edition.* Austin, Texas: The New Media Consortium.

Leis, A., Tohei, A., & Cooke, S. (2015). Smartphone Assisted Language Learning and Autonomy. *International Journal of Computer-Assisted Language Learning and Teaching*, 5, 3.

Llorens, F. (2012). *Tendencias TIC para el apoyo a la Docencia Universitaria*. Madrid: CRUE.

Mason, G. S., Shuman, T. R. & Cook, K. E. (2013). Comparing the effectiveness of an inverted classroom to a traditional classroom in an upper-division engineering course. *IEEE Transactions on Education*, 56, 4, 430-435. doi: 10.1109/TE.2013.2249066.

Michaelsen, L. K., Sweet, M. & Parmelee D. X. (2008). *Team-Based Learning: Small Group Learning's.* Next Big Step: New Directions for Teaching and Learning.

McLaughlin, J. E., Griffin, L. M., Esserman, D. A., Davidson, C. A., Glatt, D. M. & Roth, M. T. (2013). Pharmacy student engagement, performance, and perception in a flipped satellite classroom. *American Journal of Pharmaceutical Education*, 77, 9, 1-8.

Mazur, E. (1997). *Peer Instruction: A User's Manual.* Boston: Addison Wesley.

Novak, G, Patterson, E.T., Gavrin, A.D. & Christian, W. (1999). *Just-In-Time Teaching: Blending Active Learning with Web Technology.* Upper Saddle River, NJ: Prentice Hall.

Novillo, A., Fernández, M. J., Cid, M.A. & Rodríguez, I. (2015). Una modalidad de flipped classroom combinada con cuestionarios on line en la asignatura de bioquímica. Ruiz, M.A. (Eds.), *XII Jornadas Internacionales de Innovación Universitaria. Educar para transformar: Aprendizaje experiencial* (pp. 683-691). Madrid: Universidad Europea.

Pierce, R., & Fox, J. (2012). Vodcasts and active-learning exercises in a "flipped classroom" model of a renal pharmacotherapy module. *American journal of pharmaceutical education, 76, 10.*

Prieto, A. & Díaz, D. (2014). Experiencias de aplicación de estrategias de gamificación a entornos de aprendizaje universitario. *ReVisión*, 7, 2, 27-43. Retrieved from http://www.surveymonkey.com/s/SQ7BSFR

Santiago, R. (2014). Proyecto FlippedClassroom en España. Retrieved from www.theflippedclassroom.es/.

Schneider, B, Wallace, J., Blikstein, P. & Pea, R. (2013). Preparing for Future Learning with a Tangible User Interface: The Case of Neuroscience. *IEEE Transactions on Learning Technologies*, 6, 117-129. doi:10.1109/TLT.2013.15

Tourón, J. & Santiago, R. (2015). El modelo Flipped Learning y el desarrollo del talento en la escuela. *Revista de Educación*, 368, 196-231. Retrieved from http://www.mecd.gob.es/revista-de-educacion/numeros-revista-educacion/numeros-anteriores/2015/368/368_8.html

Wagner, D., Laforge, P. & Cripps, D. (2013). Lecture Material Retention: a First Trial Report on Flipped Classroom Strategies in Electronic Systems Engineering at the University of Regina. *Paper presented at the Canadian Engineering Education Association, Canada.*

Yarbro, J., Arfstrom, K.M., Mcknight, K. & Mcknight, P. (2014). Extension of a review of flipped learning. Flipped learning network. Retrieved from http://flippedlearning.org/cms/lib07/VA01923112/Centricity/Domain/41/Extension%20of%20Flipped%20Learning%20LIt%20Review%20June%202014.pdf

Yungwei, H. & Lee, S. (2016). Teaching in flipped classrooms: Exploring pre-service teachers' concerns. *Computers in Human Behavior*, 57, 250-260.

DIGITAL ART THERAPY EDUCATIONAL APPLICATIONS FOR AUTISM SPECTRUM DISORDER (ASD) POPULATION

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Abstract

Autism Spectrum Disorder (ASD) is characterized by restrictive and repetitive behavior as well as social and communication difficulties, according to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). The use of art as an educational intervention tool in children with ASD may contribute to a more flexible and relaxed attitude, producing improvements in sensory and emotional regulation, a better self-conception as well as helping substantially the communicative, social and learning capacities of the individuals of this population, enhancing both their attention skills and their ability to process new information. In this paper we review the literature devoted to visual art therapy as a special instrument for children with ASD, both in the traditional and the digital settings, in the period 2000-2017.

Keywords: Autism, ASD, art therapy, digital, educational.

1. Introduction

Through the creative process, individuals gain a sense of empowerment and solidify their cognitive, communication, fine motor and visual skills. In the case of children with Autism Spectrum Disorder (ASD), art therapy provides a multi-sensory setting to create, gain artistic mastery, establish self-awareness and develop communication, socialization and imagination thinking skills (American Art Therapy Association, 2018). Therapists have been using art as a therapy for children and adolescents with ASD, particularly in recent years. More recently, digital devices have been introduced in the art therapy process. The reason is twofold: on the one hand, our world today is digital and moreover, people with ASD generally show good acceptance to technological devices and usually align with their visuospatial strengths. Digital art provides an opportunity for therapy, rehabilitation, leisure and the development of problem solving, motor, communication skills and creativity in a safe environment that is easy to monitor and mess free. We review the literature devoted to visual art therapy as a special instrument for children with ASD, both in the traditional and the digital settings, from 2000 onwards.

2. Objectives

The developmental benefits of art are multiple: improves motor skills, helps in language development, and strengthens problem-solving and critical-thinking skills. Visual art enhances inventiveness, produces cultural awareness, and, improve academic performance. Through the creative process, individuals gain a sense of empowerment and solidify their cognitive, communication, fine motor, imagination, and visual skills (Darewych, Carlton, & Farrugie, 2015). All this benefits are particularly important in the case of children with Autism Spectrum Disorder (ASD). The arts give particular access to ways of knowing that are based upon creativity, and an awareness of spiritual and aesthetic concerns (Osborne, 2003). Previously mentioned benefits from art therapy could be the reason why therapists in recent years started to use art more and more as a therapy for children and adolescents with ASD, so that in recent years the literature bloomed. In this paper we revise the literature on visual art therapy, and digital visual art therapy for children with ASD, from 2000 onwards.

3. Method

A bibliometric electronic search for the period 2000-2017, including English and Spanish literature was conducted, by using the main bibliometric sources (Cochrane, Medline, PubMED, PsychINFO, Picarta, Eric, Google, and the website of the AATA. The following search terms were used: art, art therapy, digital therapy, digital art therapy, autism, ASD. We considered books, book chapters, papers in journals, congresses acts and thesis devoted to treat ASD children or adolescents through art interventions or digital art interventions.

4. Results

Out of our search we selected 40 papers devoted to art therapy for children with ASD, and 14 devoted to digital art therapy for ASD. We found a single literature review (Schweizer, Knort, & Spreen, 2014), analyzing a total of 18 studies in the period 1999-2007. There are also 24 papers reporting case studies. Some deal with a single child (Durrani, 2014; Emery, 2004; Elkis-Abuhoff, 2008; Etherington, 2012; Gabriels, 2003; Kuo & Plavnic, 2015; Ostrout, 2017) and Rostrom (2010) analyzes an adult. Saneei & Haghayegh, (2011) analyzes both children and their families. The remaining case studies (Betts, 200; Bragge & Fenner, 2009; Dikerson, 2010; Chu, Lee & Feng, 2016; Epp, 2008; Evans & Duvobski, 2001; Fernández, 2003; Goucher, 2012; Iserow, 2008; Kakakorgiakis, 2003; Lee & Liu, 2016; Lu, Petersen & Lacroix, 2010; Martin, 2008; Moggadhaman et al, 2016; Richard, More & Joy, 2015) analyze a variety of children and circumstances.

The benefits of art therapy in children with ASD are considered multiple. Creativity promotes attention, social interaction and stimulates communication in an engaging and experiential way (Betts, Harmer, & Schumelevich, 2014). Art therapy helps to improve disruptive behaviors or tics (Durrani, 2014; Regev & Snir, 2013). Improvements in daily functioning have been observed by using art therapy (Gabriels, 2003; Epp, 2008; Grandin, 2010; Regev & Snir, 2013; Durrani, 2014). There are different ways to classify the benefits associated to the use of art therapy in children with ASD. Betts, Hammer & Schumelevich, 2014, suggest considering four main types: (1) Cognitive growth (Grandin, 2010, Kearns, 2004); (2) Emotional regulations (Grandin, 2010; Malchiodi, 2014); (3) Regular behavior (Grandin, 2010; Kearns, 2014), and (4) physical development. Regev & Snir (2013) in a survey with 10 art therapists conclude that the functional role of visual art in the treatment of children with ASD is 10-fold, providing a detailed list of benefits. Following the DSM-5 criteria, Rafferty-Burger et al. (2016), propose a classification in five types of benefits: (1) Benefits for repetitive and stereotypical behaviors; (2) benefits for sensory impairments; (3) Benefits for impairments in communication skills; (4) Benefits for deficits in socialization skills; (5) Benefits for behavioral and emotional impairments.

The lack of a systematic practice regulation leads to a number of studies to either revise or suggest some ways of enhance the benefits of art therapy. Regev & Snir (2013) and Van Lith, Stallings, & Harris (2017) concentrate on the practice of art therapists, by analyzing the current practice, observations and conclusions of 10 and 14 art therapists, respectively. Both papers present a qualitative research out of semi-structured interviews with the selected practitioners. Different art therapy techniques may help in assessing ASD (Rafferty-Burgher et al, 2016). According to Van Lith, Stallings and Harris (2017), the Expressive Therapies Continuum (ETC), introduced in Hinz (2009), best reflected the use of materials. ETC is also supported in other studies (Lusebrink, 2010; Lusebrink & Hinz, 2016). Follow up procedures to validation are also supported (Martin, 2009; Etherington, 2012). Betts (2017) suggests that art therapy assessment should be addressed in a similar way to psychological therapy assessment (Bornstein, 2011).

The introduction of digital technologies in the use of art therapy started some 20 years ago. The literature about the use of digital technologies in educational and therapeutic interventions on the autistic population is large, but the use of digital art therapy in the treatment of children with Autism Spectrum Disorders is scarce. This could be difficult to understand, since it has been extensively reported that children with ASD enjoy the use of digital devices, and its use has been reported as effective in many cases (Grynszpan, Weis, Perez Diaz & Gal, 2013; Ramdoss et al, 2012; Golan & Baron-Cohen, 2006). It has been argued that many art therapists are uncomfortable with the use of digital technologies (Peterson et al, 2005; Kapitan, 2007), but the use of digital technologies in Art Therapy is increasing and likely to increase more in the future (Austin, 2009; Orr, 2012). A total of 14 studies on digital art therapy and autism were finally selected. 7 of those are case studies (Pares et al, 2005; Keay-Bright & Gethin Lewis; 2011, Flores et al, 2012; Keay-Bright, 2012; Hourcade et al, 2012; Darewych et al, 2015; Hillier et al, 2016). Only the last two of them deal with adults. Fuenberger et al. (2011) carry out a general review of the use of technologies in art therapy, whereas Hourcade et al. (2013) and Diment & Hobbs (2014) concentrate in the use of the iPad, and Kahogara et al. (2013) revise the use of iPad and iPods. Finally, Benton et al. (2012) and Fletcher-Watson et al. (2016) deal with design of technologies.

5. Discussion & conclusions

Art therapy is a powerful intervention for children with ASD. The application of digital techniques could be especially interesting for this population, since it provides a mess-free environment in which creativity can be particularly exploited. The benefits of art therapy for ASD children are multiple, but still the majority of the studies suffer from a lack of strong empirical evidence, and a poor scientific quality. A powerful statistical analysis, going from small case studies to larger samples and a better implementation of evaluation and assessment techniques are needed in order to improve the studies' scientific quality and credibility (Mirabella, 2015). Maybe the introduction of multidisciplinary research teams is one of the solutions to alleviate this problem. This is particularly appealing in the case of digital art therapy in ASD, where the collaboration between art therapists, psychologists, educators and engineers may produce a much better understanding of the efficacy of the new therapies.

References

American-Art-Therapy-Ass. (2018). *About Art Therapy.* Retrieved from http://www.arttherapy.org/aata-aboutarttherapy. Html

Austin, BD. (2009), Renewing the debate: digital technology in art therapy and the creative process, *Art Therapy: Journal of the American Art Therapy Association, 26(2)* pp. 83

Benton, L., Johnson, H., Ashwin, E., Brosnan, M., & Grawemeyer, B. (2012). Developing IDEAS: supporting children with autism within a participatory design team. *CHI'12 The 2012 ACM Annual Conference on Human Factors in Computing Systems.* Austin, Texas.

Betts, D. (2003). Developing a projective drawing test: Experiences with the Face Stimulus Assessment (FSA). *Art Therapy: Journal of the American Art Therapy Ass., 20*(2), 77-82.

Betts, D. (2017). Retrieved from *https://donnabettsphd.wordpress.com/assessment/.*

Betts, D., Harmer, R., & Schumelevich, G. (2014). The contributions of art therapy in treatment, assessment, and research with people who have Autism Spectrum Disorders. En V. Hu (ed), *Frontiers in Autism Research: New horizons for diagnosis and treatment* (págs. 627-655). Hackensack, New Jersey: World Scientific.

Bornstein, R. (2011). Toward a process-focused model of test score validity: Improving psychological assessment in science and practice. *Psychological Assessment, 23*(2), 532-544.

Bragge, A., & Fenner, P. (2009). The emergence of the interactive square as an approach to art therapy with autistic children. *International Journal of Art Therapy, 14*(1), 17-28.

Chu, W., Lee, G., & Feng, H. (2016). Use of a behavioral art program to improve social skills of two children with Autism Spectrum Disorder. *Education and Training in Autism and Developmental Disabilities, 51*(2), 195-210.

Darewych, O., Carlton, N., & Farrugie, K. (2015). Digital technology use in art therapy with adults with developmental disabilities. *Journal of Developmental Disabilities, 21*(2), 95-102.

Dikerson, K. (2010). *Re-imagining Identity: The Arts and the Child with Autism Spectrum Disorder.* Doctoral Dissertation.

Diment, L, Hobbs, D. (2014), Interactive technologies that engage children with disabilities in visual art: a review, *Proceedings of the Australian Biomedical Engineering Conference (ABEC), August 20-22*

Durrani, H. (2014). Facilitating attachment in children with autism through art therapy: A case study. *Journal of Psychotherapy Integration, 24*(2), 99-108.

Elkis-Abuhoff, D. (2008). Art therapy applied to an adolescent with Asperger´s syndrome. *The Arts in Psychotherapy, 35*(4), 262-270.

Emery, M. (2004). The emergence of the interactive square as an approach to art therapy with autistic children. *Art Therapy: Journal of the American Art Therapy Ass., 21*(3), 143-147.

Epp, K. (2008). Outcome-based evaluation of a social skills program using art therapy and group therapy for children on the autism spectrum. *Children & Schools, 30*, 27-36.

Etherington, A. (2012). Assessing a young autistic boy in art therapy private practice. In A. Gilroy, R. Tipple, & C. Brown, *Assessment in Art Therapy* (pp. 101-105). London/New York: Routledge.

Evans, K., & Duvobski, J. (2001). *Art therapy with children on the autistic spectrum: Beyond words .* London/ Philadelphia Jessica Kinsgley.: Jessica Kinsgley.

Evans, K., & Rutten-Saris, M. (1998). Shaping vitality affects, enriching communication: Art therapy for children with autism. In D. Sandle (ed), *Development and diversity. New applications in art therapy* (págs. 57-77). London/Washington/New York: Free Association Books Limited.

Fernandez, I. (2003). Creatividad, arte terapia y autismo. Un acercamiento a la actividad plastica como proceso creativo en niños autistas. *Arte, individuo y sociedad, 15*, 135-152.

Fletcher-Watson, S., Pain, H., Hammond, S., Humphry, A., & McConachie, H. (2016). Designing for young children with autism spectrum disorder: A case study of an iPad app. *International Journal of Child-Computer Interaction, 7*, 1–14.

Flores, M., Musgrove, K., Renner, S., Hinton, V., Strozier, S., Franklin, S., & Hil, D.(2012). A comparison of communicationusing the Apple iPad and a picture-basedsystem. *AAC: Augmentative and AlternativeCommunication*, *28*, 74–84.

Frauenberger, C., Good, J., and Keay-Bright, W. Designing technology for children with special needs: bridging perspectives through participatory design. *CoDesign,* 7, 1 (2011), 1-28.

Furniss, G. (2008). Celebrating the art making of children with autism. *Art Education, 9*, 8-12.

Gabriels, R. (2003). Art theraphy with children who have autism and their families. In C. Malchiodi (ed), *Handbook of Art Therapy* (pp. 193-206). New York, NY: The Gildford Press.

Gallo-Lopez, L. (2012). From monologue to dialogue: The use of play and drama technology for children with Autism Spectrum Disorder. In L. Gallo-Lopez, & L. Rubin (eds), *Play-based interventions for children and adolescents with Autism Spectrum Disorders* (pp. 97-114). NewYork: Routledge, Taylor & Francis Group.

Golan, O., & Baron-Cohen, S. (2006). Systemizing empathy: Teaching adults with Asperger syndrome or high-functioning autism to recognize complex emotions using interactive multimedia. *Development and Psychopathology, 18*(2), 591-617.

Goucher, C. (2012). Art therapy, connecting and communicating. In L. Gallo-Lopez, & L. Rubin (eds), *Play-based interventions for children and adolescents with Autism Spectrum Disorders* (págs. 295-313). New York, NY: Routledge, Taylor & Francis Group.

Grandin, T. (2010). *The world needsall kinds of minds.* Retrieved 10-1-2018 from https://www.ted.com/talks/temple_grandin_the_world_needs_all_kinds_of_minds/transcript.

Grynszpan, O., Weiss, P., Perez-Diaz , F., & Gal, E. (2013). Innovative technology-based interventions for autism spectrum disorders: A meta-analysis. *Autism, 18*(4), 346 - 361.

Hillier , A., Greher, G., Queenan , A., Marshall , S., & Kopec, J. (2016). Music, technology and adolescents with autism spectrum disorders: The effectiveness of the touch screen interface. *Music Education Research, 18*(3), 269-282.

Hourcade, J., Bullock-Rest, N., & E. Hansen, T. (2012). Multitouch tablet applications and activities to enhance the social skills of children with autism spectrum disorders. *Personal and Ubiquitous Computing, 16*(2), 157–168.

Hourcade, J., Williams, S., Miller, E., Huebner, K., & Liang, L. (2013). Evaluation of tablet apps to encourage social interaction in children with autism spectrum disorders. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (págs. 3197-3206). Paris, ACM.

Isserow, J. (2008). Looking together: Joint attention in art therapy. *International Journal of Art Therapy, 13*(1), 34-42.

Kagohara, D. M., van der Meer, L., Ramdoss, S., O'Reilly, M. F., Lancioni, G. E., Davis, T. N., Sigafoos, J. (2013). Using iPods® and iPads® in teaching programs for individuals with developmental disabilities: A systematic review. *Research in Developmental Disabilities*, *34*, 147–156.

Kakakorgiakis, I. (2013). The Visual Arts-Based Experiences of Students with Learning Disabilities: Two Multi-perspective case studies. (Master's Thesis, Queen University, Ontario, Canada). Retrieved from:https://qspace.library.queensu.ca/bitstream/handle/1974/8435/Karagiorgakis_Irene_201310_ MEd.pdf?sequence=4&isAllowed=y

Kapitan, L. (2007). Will art therapy cross the digital culture divide? *Art Therapy: Journal of the American Art Therapy Ass., 24*(2), 50-51.

Keay-Bright, W. (2007), The reactive colours project: demonstrating participatory and collaborative design methods for the creation of software for autistic children. *Design Principles and Practices: An International Journal 1*, 2 , 133-151.

Keay-Bright, W. (2012) Designing interaction through sound and movement with children on the autistic spectrum. In Brooks, A: (ed). Arts and Technology. ArtsIT 2011. Lecture Notes of the Institute for Computes Sciences, Social Informatics and telecommunication En gineering, Vol. 101, 1-9

Keay-Bright, W., & Gethin-Lewis, J. (2011). Co-Creating Tools for Touch: applying an inspire-create play-appropriate methodology for the ideation of therapeutic technologies. *Proceedings of Include 2011, 18 - 20 April 2011, Royal College of Art, London.*

Kearns, D. (2004). Art therapy with a child experiencing sensory integration difficulty. *Art Therapy: Journal of the American Art Therapy Ass., 21*(2), 95-101.

Kuo, N., & Palvnik, J. (2015). Using an antecedent art intervention to improve the behavior of a child with autism. *Art Therapy: Journal of the American Art Therapy Ass., 32*(2), 13-19.

Lee, S., & Liu, H. (2016). A pilot study of art therapy for children with special educational needs in Hong Kong. *The arts in psychotherapy, 51*, 24-29.

Lu, L., Petersen, F., & Lacroix, L. R. (2010). Stimulating creative play in children with autism through sandplay. *The arts in Psychotherapy, 37*(1), 56-64.

Lusebrink, V. (2010). Assesment and therapeutic application of the Expressive Therapies Continuum: Implications for for brain structures and functions. *Journal of the American Art Therapy Ass., 27*(4), 168-177.

Lusebrink, V., & Hinz, L. (2016). The expressive therapies continuum as a framework in the treatment of trauma. In J. King (ed), *Art therapy, trauma and neuroscience: theoretical and practical perspectives* (pp. 42-67). New York, NY: Routledge.

Malchiodi, C. (2014). Creative arts therapy approaches to attachment issues. In C. Malchiodi, & D. Crenshaw (eds), *Creative arts and play for attachment problems* (págs. 3-18). New York, NY: Guilford Press.

Martin, N. (2008). Assessing portrait drawings created by children and adolescents with autism spectrum disorder. *Art Therapy: journal of the American Art Therapy Ass., 28*(1), 15-23.

Martin, N. (2009). Art therapy and autism: Overview and recommendations. *Art Therapy: Journal of the American Art Therapy Ass., 26*(14), 187-190.

Moghaddam, K., Mohammadi, A., Daramadi, P., & Afrood, G. (2016). Effects of the family-based art therapy program on the social interactions, verbal skills and stereotypic behaviors of children with autism spectrum disorders (ASD). *Iran J. Public Health, 45*(6), 830-832.

Mirabella, G. (2015), Is Art therapy a reliable tool for rehabilitating people suffereing from brain/mental diseases? *The Journal of Alternative and Complementary Medicine21(4),* 196–199

Orr, P. P. (2012). Technology use in art therapy practice: 2004 and 2011 comparison.*The Arts in Psychotherapy, 39*, 234–238.

Osborne, J. (2003). Art and the child with autism: Therapy or education? *Early Child Development and Care, 173*(4), 411-423.

Parés N, Carreras, A., Durany, J., Ferrer, J., Freixa, P. Gómez,D., Kruglanski, O., Parés, O, Ribas, JI, Soler, M. , Sanjurjo, A. (2005) Promotion of creative activity in children with severe autism through visuals in an interactive multisensory environment. Proceedings of IDC '05:110-116.X.

Peterson, B., Stovall, K., Elkins, D., & Parker-Bell, B. (2005). Art Therapists and Computer Technology. *Art Therapy: Journal of the American Art therapy Ass., 22*(3), 139-149.

Ramdoss, S., Machalicek, W., Rispoli , M., Mulloy , A., Lang, R., & O'Reilly , M. (2012). Computer-based interventions to improve social and emotional skills in individuals with autism spectrum disorders: a systematic review. *Developmental Neurorehabilitation, 15*(2), 119-35.

Regev, D., & Snir, F. (2013). Art therapy for treating children with autism spectrum disorder (ASD): the unique contribution of art materials. *Academic Journal of Creative Art Therapies, 3*(2), 251-260.

Richard, D., More, W., & Joy, S. (2015). Recognizing emotions: Testing an intervention for children with Autism Spectrum Disorder. *Art Therapy: J. of the American Art Therapy Ass., 32*(1), 13-19.

Rostron, J. (2010). On amodal perception and language in art therapy with Autism. *International Journal of Art Therapy, 15*(1), 36-49.

Saneei, A., & Haghayegh, S. (2011). Family drawings of Iranian children with autism and their family members. *The Arts in Psychotherapy, 38*(5), 333-339.

Schweizer, M., Knort, E., & Spreen, M. (2014). Art therapy with children with autism spectrum disorders. *The arts in psychotherapy*(41), 577-593.

Tovar-Guerra, J., Beltran, A., Guzmán, N., Mazo-Pineda, D. S.-S., & Tapias, M. (2016). El arteterapia como estrategia pedagógica de la educación del niño con Trastornos de Espectro del Autismo (TEA). *CEDOTIC, 1(1)*

Van Lith, T., Stallings, J., & Harris, C. (2017). Discovering good practice for art therapy with children who have Autism Spectrum Disorder: The results of a small scale survey. *The Arts in Psychotherapy, 54*, 78-84.

USING CAI FOR IMPROVING ACADEMIC SKILLS OF STUDENTS WITH SPECIAL NEEDS

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Abstract

Students in special education classes have been found to make the greatest growth in reading skills during the early primary grades, making this a critical period for early literacy intervention. Research has also stressed the importance of early intervention for students with mathematics difficulties. Using computer-assisted instruction (CAI) technology has shown promise; however, most of the literature concerning students with disabilities involves case studies. The current study explored the impact of CAI instruction on literacy and math skills for students with active special education status. CAI technology was used by elementary school students with active special education status in two school districts. Performance at the end of the school year for students with active special education status who used CAI was compared to students who either had low usage of, or who did not use, CAI. In all cases, students with active special education status learning with CAI curriculum showed consistent improvement, demonstrating higher end of year scores and gain scores on measures of math and reading skills. Across all strands, students with active special education status who used CAI outperformed both control students with active special education status, as well as control students who do not have active special education status. These results add to the findings of prior research which indicated that CAI curriculum could have a particular benefit to sensitive populations.

Keywords: Early childhood, literacy, math, technology, special education.

1. Introduction

The increasing population of school-aged students with active special education status needs curricula that addresses these students' specific needs. Through changing policies over the past two decades, students with active special education status have transitioned from being expected to participate in standardized assessments to being expected to perform at grade-level standards (Browder, Wakeman, Flowers, Rickelman, & Pugalee, 2007; Greenwood, Bradfield, Kaminski, Linas, Carta, & Nylander, 2011); however, most students with active special education status have immense reading difficulties (Gersten & Dimino, 2006; Koppenhaver, Hendrix, & Williams, 2007) as well as poor communication skills, and less general knowledge than their peers (Janus, Hughes, & Duku, 2010). Students in special education classes have been found to make the greatest growth in reading skills during the early primary grades, so students with active special education status need early literacy intervention (Christ, Silberglitt, Yeo, & Cormier, 2010).

Computer-assisted instruction (CAI), presenting learning materials using interactive technology, has been found to have a unique impact for students with active special education status (Pennington, 2010). CAI activities require mere minutes of instructional time, allowing students to learn without needing to be engaged with the material for long periods of time (Pennington, Ault, Schuster, & Sanders, 2010) because of the salience of the technology (Pennington, 2010). Research has shown that individualized interventions have developed language and literacy competence in students with active special education status (Koppenhaver, Hendrix, & Williams, 2007): CAI has also been found to improve literacy skills of students with active special education status in upper elementary and middle school grades (Berninger, Nagy, Tanimoto, Thompson, & Abbott, 2015), so further research is needed to address the differences in the skills of students with active special education status entering elementary school, as demonstrated by the scores on standardized assessments (Browder, Wakeman, Flowers, Rickelman, & Pugalee, 2007).

Research involving the use of CAI for students with active special education status has been promising. Teaching functional sight words has been found to be more effective when taught by teachers than by CAI strategies (Coleman, Hurley, & Cihak, 2012), but teaching word identification was found to be effective through teacher-directed only, teacher-directed and CAI, and CAI only (Coleman-Martin, Heller, Cihak, & Irvine, 2005). Concerning math and science skills, students using CAI technology significantly improved number comparison, but not other areas of math skills (Räsänen, Salminen, Wilson, Aunio, & Dehaene, 2009), and CAI technology has proven to be an effective way to teach science skills (Smith, Spooner, & Wood). However, most of the literature concerning students with disabilities involve small sample sizes or case studies (Fletcher-Watson, 2014; McClanahan, Williams, Kennedy, & Tate, 2012): More experimental studies with greater sample sizes are needed to give light to the academic needs of this population.

2. Methods

2.1. Participants
2.1.1. District 1. The first district consisted of 257 kindergarten students enrolled in a public school district in Indiana during the 2015-2016 school year. The majority of students in the district are Caucasian, and approximately half of the students qualify for free lunch.

2.1.2. District 2. The second district consisted of 1,551 first grade students enrolled in a public school district in Texas during the 2015-2016 school year. Approximately 40% of the students in the district are Hispanic, 30% are Caucasian, and 15% are African American.

2.2. Materials
Computer-adaptive Program. The program offers a comprehensive, computer-adaptive reading, science, and math curriculum for pre-kindergarten through second grade students. The software presents a wide range of multimedia-based activities in an adaptive sequence tailored to each student's initial placement and his or her individual rate of growth throughout the complete curriculum.

Mobile Classroom: The Dynamic Indicators of Basic Early Literacy Skills (mCLASS: DIBELS Next). The mCLASS: DIBELS Next assessment evaluates the early literacy skills of students. The assessment was designed to determine which students need additional assistance in developing early literacy skills.

Mobile Classroom: Math (mCLASS: Math). The assessment mCLASS: Math was designed to assess early mathematics skills and identify at risk students in need of remedial early mathematics assistance. The assessment measures fundamental skills required by the Common Core State Standards in mathematics for kindergarten through third grade.

The Texas Primary Reading Inventory (TPRI). The TPRI is an early reading assessment designed to identify the reading development of students in kindergarten through third grade and is administered to students individually. The test identifies students that are at risk for reading difficulties and sets learning objectives for students.

2.3. Procedure
Kindergarten students in the experimental group were expected to use CAI for fifteen minutes per day, five days per week, throughout the 2015-2016 school year, and first grade students in the experimental group were expected to use CAI for thirty minutes per day, five days per week, throughout the 2015-2016 school year. Students in the control groups received traditional literacy instruction for the same amount of time that the experimental group received CAI instruction. Thus, overall exposure to literacy and math instruction was the same for both groups.

In the first district, the mCLASS: DIBELS Next assessment and the mCLASS: Math assessment were administered three times throughout the school year, at the beginning, middle, and end of the year. In the second district, the TPRI was administered at the beginning and end of the year.

3. Findings

3.1. District 1
The experimental group for the mCLASS: DIBELS Next ($n = 28$) consisted of students with active special education status who used CAI for more than 1,000 minutes throughout the spring semester of the 2015-2016 school year. The control group ($n = 8$) that consisted of students with active special education status used CAI for less than 400 minutes during the spring semester of the 2015-2016 school

year, and the control group (n = 12) that consisted of students with no active special education status used CAI for less than 400 minutes during the spring semester of the 2015-2016 school year.

The experimental group for the mCLASS: Math (n = 33) consisted of students who used CAI for more than 1,000 minutes throughout the 2015-2016 school year. The control group (n = 21) that consisted of students with active special education status used CAI for less than 400 minutes during the 2015-2016 school year, and the control group (n = 36) that consisted of students with no active special education status used CAI for less than 400 minutes during the 2015-2016 school year.

3.1.1. Group differences using analysis of covariance (ANCOVA). ANCOVAs examining group differences in mCLASS: DIBELS Next end of year scores while covarying for middle of year scores were conducted, and ANCOVAs examining group differences in mCLASS: Math end of year scores while covarying for beginning of year scores were conducted (see Figures 1 and 2).

Figure 1. mCLASS: DIBELS next and math scores by strand by special education control.
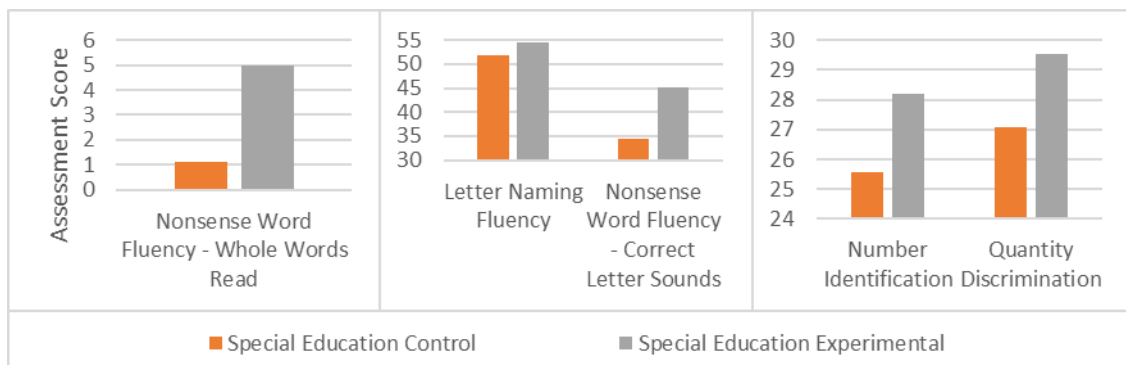
Figure 2. mCLASS: DIBELS next and math scores by strand by non-special education control.
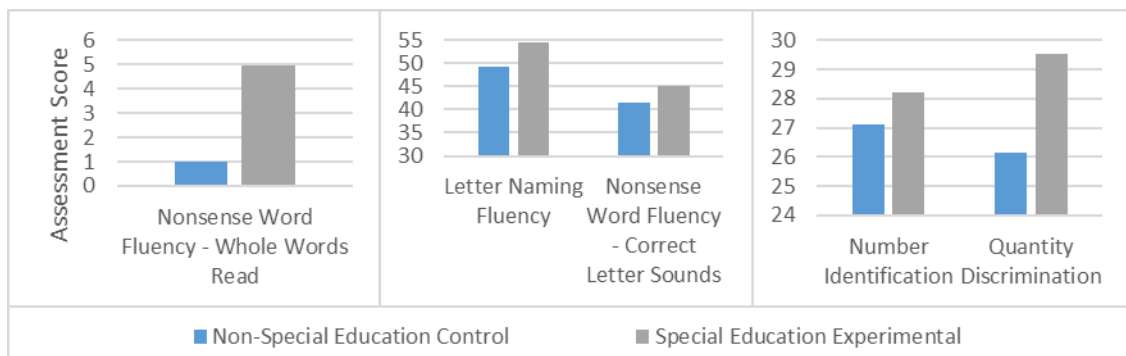
3.2. District 2

The analysis includes students that participated in the TPRI test at the beginning and at the end of the year. The experimental group (n = 7) consisted of students with active special education status who used CAI throughout the 2015-2016 school year. The control group (n = 30) that consisted of students with active special education status did not use CAI during the 2015-2016 school year, and the control group (n = 257) that consisted of students with no active special education status did not use CAI during the 2015-2016 school year.

3.2.1. Group Differences by Special Education Status Using One-Way ANOVAs. One-way ANOVAs were conducted to examine the effects of CAI and special education status on gains for each strand (see Figures 3 and 4).

Figure 3. TPRI gain scores by strand by special education control.
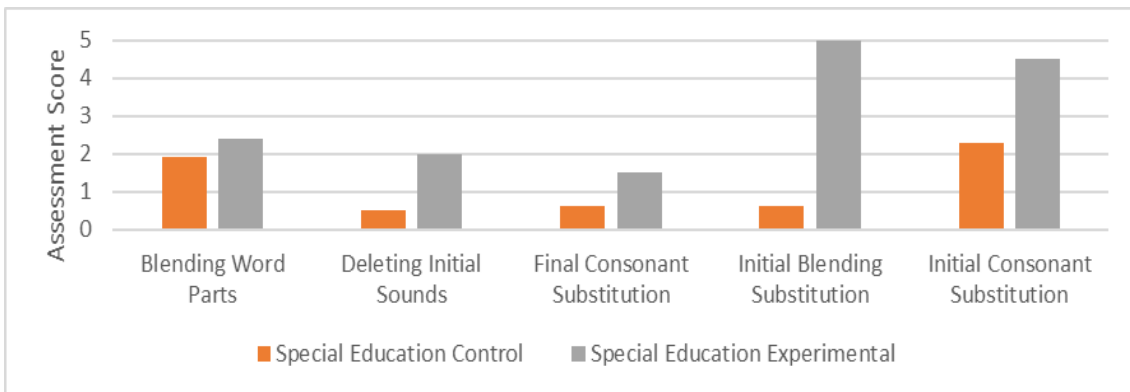
Figure 4. TPRI gain scores by strand by non-special education control.
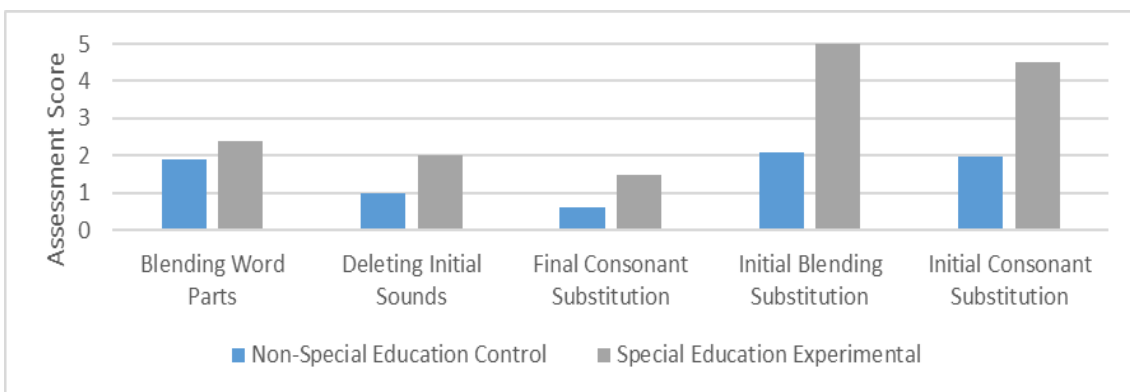
4. Discussion

The current study demonstrated that use of CAI significantly increased overall performance on math and reading metrics: In all cases, students receiving CAI curriculum had better learning outcomes than students receiving traditional, teacher-centered lessons. Benefits of CAI were also shown to scale with use, with students using CAI for more than 1,000 minutes tending to have significantly better results than students using CAI for less than 400 minutes. These findings are consistent with, and extend the findings of, previous research which pointed to better learning outcomes coinciding with CAI curriculum (Saine, Lerkkanen, Ahonen, Tolvanen, & Lyytinen, 2010; Stetter & Hughes, 2010).

Students with active special education status learning with CAI curriculum showed consistent improvement. In all cases, the experimental group not only outperformed the control group with students with active special education status, but also the control group with students without active special education status. These findings demonstrate that CAI could increase the percentage of students with disabilities meeting proficiency on the Nation's Report Card: Most recently, 12% of fourth grade students with disabilities scored as proficient as compared to 40% of fourth grade students not with disabilities in 2015 (NCES, 2015). These results extend the findings of prior research which indicated that CAI curriculum could have a particular benefit to sensitive populations (Mohammed & Kanpolat, 2010; Ploog, Scharf, Nelson, & Brooks 2013).

The current study did not gather longitudinal data. Given this limitation, the current study provides no information on the long term impact of CAI curriculum, the longevity of any benefits of its usage, and the relative impact of multiple years of CAI education. Further research into CAI, both in general and specifically for students with active special education status, could benefit from addressing these subjects through employing a longitudinal design.

References

Berninger, V. W., Nagy, W., Tanimoto, S., Thompson, R., & Abbott, R. D. (2015). Computer instruction in handwriting, spelling, and composing for students with specific learning disabilities in grades 4–9. *Computers & Education, 81*, 154-168.

Browder, D. M., Wakeman, S. Y., Flowers, C., Rickelman, R. J., Pugalee, D., & Karvonen, M. (2007). Creating access to the general curriculum with links to grade-level content for students with significant cognitive disabilities: An explication of the concept. *The Journal of Special Education, 41*(1), 2-16.

Christ, T. J., Silberglitt, B., Yeo, S., & Cormier, D. (2010). Curriculum-based measurement of oral reading: An evaluation of growth rates and seasonal effects among students served in general and special education. *School Psychology Review, 39*(3), 447–462. Retrieved November 1, 2017, from: http://search.proquest.com/openview/e71f7b3aebaf33b190ee440a8e87374a/1

Coleman-Martin, M. B., Heller, K. W., Cihak, D. F., & Irvine, K. L. (2005). Using computer-assisted instruction and the nonverbal reading approach to teach word identification. *Focus on Autism and Other Developmental Disabilities, 20*(2), 80-90.

Fletcher-Watson, S. (2013). A targeted review of computer-assisted learning for people with autism spectrum disorder: Towards a consistent methodology. *Review Journal of Autism and Developmental Disorders, 1*(2), 87-100.

Gersten, R., & Dimino, J. A. (2006). RTI (Response to Intervention): Rethinking special education for students with reading difficulties (yet again). *Reading Research Quarterly, 41*(1), 99-108.

Greenwood, C. R., Bradfield, T., Kaminski, R., Linas, M., Carta, J. J., & Nylander, D. (2011). The response in intervention (RTI) approach in early childhood. *Focus on Exceptional Children, 43*(9), 1-21.

Janus, M., Duku, E., & Hughes, D. (2010). Patterns of school readiness among selected groups of Canadian children: Children with special needs and children with diverse language backgrounds. *Canadian Council for Learning.* Retrieved October 31, 2017, from: http://www.ccl-cca.ca/pdfs/OtherReports/Janus-FinalReport.pdf.

Koppenhaver, D., Hendrix, M., & Williams, A. (2007). Toward evidence-based literacy interventions for children with severe and multiple disabilities. *Seminars in Speech and Language, 28*(1), 79-89.

McClanahan, B., Williams, K., Kennedy, E., & Tate, S. (2012). A breakthrough for Josh: How use of an iPad facilitated reading improvement. *TechTrends, 56*(3), 20-28.

Mohammed, A. A., & Kanpolat, Y. E. (2010). Effectiveness of computer-assisted instruction on enhancing the classification skill in second-graders at risk for learning disabilities. *Electronic Journal of Research in Educational Psychology, 8*(3), 1115-1130.

National Center for Education Statistics (NCES) (2015). NAEP overview. Retrieved December 12, 2016, from: http://www.nces.ed.gov/nationsreportcard/about/

Pennington, R. C. (2010). Computer-assisted instruction for teaching academic skills to students with autism spectrum disorders: A review of literature. *Focus on Autism and Other Developmental Disabilities, 25*(4), 239-248.

Pennington, R. C., Jones Ault, M., Schuster, J. W., & Sanders, A. (2010). Using simultaneous prompting and computer-assisted instruction to teach story writing to students with autism. *Assistive Technology Outcomes and Benefits, 7*(1), 24–38. Retrieved November 1, 2017, from: http://files.eric.ed.gov/fulltext/EJ961160.pdf

Ploog, B.O., Scharf, A., Nelson, D., Brooks, P.J. (2013). Use of computer-assisted technologies (CAT) to enhance social, communicative, and language development in children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 43*(2), 301-322.

Räsänen, P., Salminen, J., Wilson, A. J., Aunio, P., & Dehaene, S. (2009). Computer-assisted intervention for children with low numeracy skills. *Cognitive Development, 24*(4), 450-472.

Saine, N. L., Lerkkanen, M. K., Ahonen, T., Tolvanen, A., & Lyytinen, H. (2010). Predicting word-level reading fluency outcomes in three contrastive groups: Remedial and computer-assisted remedial reading intervention, and mainstream instruction. *Learning and Individual differences*, 20(5), 402-414.

Smith, B. R., Spooner, F., & Wood, C. L. (2013). Using embedded computer-assisted explicit instruction to teach science to students with autism spectrum disorder. *Research in Autism Spectrum Disorders, 7*(3), 433-443.

Stetter, M. E., & Huges, M. T. (2010). Computer-assisted instruction to enhance the reading comprehension of struggling readers: A review of the literature. *Journal of Special Education Technology, 25*(4), 1-16.

OPEN AIR EDUCATIONAL SPACES AND LEARNING ENVIRONMENTS

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Abstract

Educational spaces are a fundamental aspect of school activities and help define the multidimensional nature of educational contexts; they make an active contribution to training, and certainly should not be understood and represented as mere containers, as neutral terrain in which the relationship between teachers and learners simply takes place. The features and configuration of educational spaces become more significant in the field of outdoor educational curricula and land cultivation practices, since the change of the setting affects all aspects of the educational relationship.

The aim of this paper is to draw attention to the unique advantages of open air spaces for horticulture in terms of learning environments; it will also show how students can use the interaction between numerous elements to build their own paths of knowledge. In particular, the following aspects will be examined: the social dimension of learning; collaboration; openness to difference as a resource; the use and development of authentic learning contexts; and the importance of promoting a wide ranging, multifaceted vision of knowledge in the field of ecology.

Keywords: Open air teaching, learning environments, horticultural education, sustainable development.

1. Introduction

This investigation begins by asking if and when the natural environment (or what is defined as such) can also be considered a learning environment in the constructivist sense. Already these first terms - *learning environment* and *natural environment* - indicate the flexibility and ubiquity of the word *environment* which is used in many expressions. It is a broad and complex term, the connotation and denotation of which is often accompanied by adjectives that clarify its meaning and define the boundaries of attribution.

The contours of learning environments have become clearer thanks to research in the education field which, over time, has identified some of the characteristics that define an educational context as a learning environment. It is understood as a training device with an implementation value; in particular, in its constructivist connotation, it provides the set-up of an arrangement that focuses on tools and resources in order to favor the activation of the learning process. The need to pay attention to the educational context is certainly not new in education literature; indeed, it has been a central question in educational reflection and practice for more than a century. In fact, the demand for modern advances in educational methodology focusing on active learning has led to a revaluation of the educational space both inside and outside the school, albeit with very different focal points from the investigation in question, and the teacher-centered lesson is no longer considered to be the only way to promote learning, nor the most effective.

The current demands for innovation aspire towards concrete, virtual, iconic or symbolic materials to set up learning environments, and this is precisely the direction in which the natural environment can be (and has become) a precious resource for modernizing educational procedures. If, as noted by Rivoltella, we cannot fail to say we are constructivists (2007), then, if we are to abide by the basic ideas of this paradigm, the reflections on the possibilities of forming learning paths inspired by the demands of constructivism are endless. This reflection and the aim of this investigation are particularly valid above all with regard to the issues arising from another way of understanding the term *environment:* the natural environment.

Following the paths traced by constructive and socio-constructivist reflections on the configuration of learning environments, which pay attention to the multidimensionality of the devices and support offered to students, the focus of the educational practice becomes the preparation of the learning *scaffolding*, in order to offer learning resources that can facilitate the process of building knowledge to

encourage students to become autonomous learners. (Black & McClintock, 1996; Lebow, 1993; Savery & Duffy, 1996; Dunlap & Grabinger, 1996).

Educational spaces have always been a fundamental component of school activities, and should certainly not just be seen as mere containers, neutral terrains in which the relationship between teachers and learners simply takes place, but as training devices that contribute to defining the variegated and multidimensional character of learning situations. The physical characteristics of the school environments have effects on the learning, interactions and the well-being of students, so much so that they can even be considered, according to Bonaiuto (2011), the "third teacher", along with the teachers and peers. Therefore, the impact of the configuration of the spaces has become an even more sensitive issue in the context of outdoor educational practices for the care of the earth since, in these cases, it affects the whole setting and, consequently, all aspects of the educational relationship.

2. Objectives and methodological approach

Leaving aside the dichotomy between the extremes of experimentalism and ideology, the methodological focus of this article is to identify the features of a set of events in the field of outdoor education, and to see to what extent they can be applied in similar situations (Calvani, 2007). In this way, we can describe some aspects of outdoor educational spaces for horticulture in terms of learning environments.

I have had two opportunities to identify the specific characteristics of the sets of events referring to outdoor cultivation activities for educational purposes in school contexts. The first was an experience carried out at the association of *Orti di Pace Sicilia*, as a founder member and on the board of directors (the Association has promoted the diffusion of the practice of the cultivation of vegetable gardens and gardens since 2009 by connecting operators in Sicily in the field of education, training, and rehabilitation; www.ortidipacesicilia.org). The second was a series of observation activities carried out in a school in the province of Catania, member of the *Orti di pace Sicilia*, which was also indicated as a comprehensive school that practices outdoor horticultural activity in the survey work in the research project FIR2014, *Asse natura-cultura, Progettazione educativa, sistema formativo integrato e configurazione del territorio* (Tomarchio & Strongoli, 2017; D'Aprile, 2016).

On the basis of these experiences, I have very briefly presented here a process of reflection aimed at identifying the features that allow us to consider the outdoor educational spaces reserved for horticultural activities as natural environments of learning. Before proceeding with this work of analysis, it is necessary to clarify the notion of the learning environment itself, since, as already mentioned, it is to be understood as a place of meaningful learning with a high degree of interconnection of the elements that, like *learning by doing*, does not allow distinctions to be made *in situations*; nevertheless, I will try to make these distinctions below for analytical reasons.

3. Research paths: natural environments as learning environments

Many of the defining elements of the so-called constructivist education already identified by Lebow (1993) can be found within the concept of a learning environment, such as collaboration, personal autonomy, generativity, reflexivity, active involvement, personal relevance and pluralism. Setting up a learning environment requires the presence and configuration of numerous elements: a conception of learning that abandons the idea of the *discovery* of an alleged cognitive truth in favor of the possibility of constructing knowledge; the active and participatory role of the students; the situated character of learning within authentic contexts; the social aspect of learning; metacognition; and self-assessment, offering constant opportunities for reflection on the process. The task of the teacher is, therefore, to prepare a *living* environment, like a scientist prepares in the laboratory the solution in which an organism can live and grow.

In order to investigate the issue in depth, I will briefly summarize below the particular elements of open spaces dedicated to horticulture that allow us to consider them as possible learning environments, and then configure them. The characteristic elements of the classical learning environments that can be identified in outdoor horticultural spaces are:
- the context and the place of the activities;
- the presence of clear, stated goals, which can favor the so-called goal setting;
- the legitimacy of the differences between the subjects involved;
- the use and exploitation of authentic learning environments;
- the social dimension of learning;
- collaboration.

The development of these aspects can be fostered in outdoor educational contexts characterized by orientation towards an end, such as the creation of a vegetable garden, especially within group dynamics in which the sense of belonging and mutual interdependence is promoted, which require conscious recognition of the other and their differences. The educational strategies that can be favored by the cultivation activities of the earth in an outdoor educational key are: problem solving, apprenticeship as modeling, and backward fading. In keeping with the observations, it emerged that problem solving was sustained thanks to the comparison with real problems of strong involvement and to diversified representations of reality that lead to the formulation of hypotheses and subsequent verification attempts. The presence of learning activities that can be traced back to apprenticeship as modeling is linked to the possibility of placing the student-apprentice in a concrete situation in which he or she can acquire progressive autonomy that can favor, over time, the transferability of skills to other contexts.

The strategy of presentation of the contents of the backward fading consists in the gradual transition from guided examples to problems and in the progressive decrease of the educational control based on the increase in the expertise and the self-management ability of the student, until the assignments given by the teacher become progressively less structured. The observation activities I carried out at the afore-mentioned school in Catania confirmed precisely this progression. In particular, it emerged that at the time the activities started, the teachers had a directional role; they assigned the tools to the different students and organized the activities to be carried out. This modality changed substantially when the activities got underway, because the teachers greatly reduced their presence, taking the role of observers, standing at a distance from the vegetable garden and leaving the responsibility of the work in the hands of the students. For their part, the students did not go to the teachers except to ask for information. They carried out the day-to-day maintenance of the vegetable garden autonomously, and the relationship between teachers and students returned to be directive when new activities had to be started (Corsini, Strongoli, in press).

I noticed that the interaction dynamics between the students in deconstructed contexts such as outdoor ones tend to be different from the individualistic and competitive ones that are typical of students: forms of articulated, not asymmetric, socialization, are favored and cooperative actions are facilitated, whereby students work in small groups or individually on a task that requires a common effort to achieve a shared purpose. The distribution of information and tasks is shared and the students start to interact with each other and form relationships.

The social dimension of learning is sustained by the involvement of the students in the activities with their whole bodies; in fact, non-verbal communication is favored and the body is certainly the main mediator of such communication, both regarding proxemics and kinesics. Compared to the tradition classroom teaching, there is a change in the physical distance that occurs:
- between students;
- between students and teachers;
- and between students and objects of knowledge.

In this sense, therefore, in an outdoor educational horticulture context the communication rests on mainly symbolic channels; indeed, we may refer to the now classic works of Thompson (1995) on computer-mediated communication which indicates an increase in symbolic clues. The knowledge acquired in the natural environment is generative as it is an open form of knowledge which raises questions and doubts and favors the transition from disciplinary knowledge to transversal knowledge. (Strongoli, 2017).

The use and exploitation of authentic learning contexts are promoted because of the reduced distance between the students and the knowledge objects, which are active, i.e. they refer to direct experience. The development of a sense of self-esteem and effectiveness is encouraged, because learning tends to improve when the student has a direct perception of his own success. However, to this regard, it is also necessary to reflect on the possibility of facing what could be perceived as a failure, such as the lack of growth of crops due to unfavorable temperatures, bad weather and so on. In these cases, the student has to deal with the authenticity of the context in all its complexity.

Last but not least, the context and the co-text is the natural environment which, by becoming the setting for educational action, can lead to a multi-perspective vision of ecologically oriented knowledge. The possibility of favoring learning pathways oriented to environmental education through outdoor educational activities, and particularly through educational practices related to the cultivation of the earth, is indeed a very broad theme for which we refer to other works (Strongoli, 2017). Here we limit ourselves to mentioning the educational movements that are proliferating all over the world in favor of outdoor educational experiences, from kindergartens and schools in the forest up to the so-called educational farms, the objective of which, among others, is also to promote the development of environmentally friendly and eco-sustainable behavior.

4. Conclusion

To conclude, therefore, I believe we can consider and therefore configure the outdoor educational spaces dedicated to horticulture as possible learning environments; these are contexts in which the preparation of the space becomes the main task of the teacher/director to foster, among other things, the *goal setting*, the development of cooperative interaction methods, and a social dimension of learning. The challenge that starts from here is to turn the potential into concrete elements of an outdoor education, which, in turn, inevitably remains connected to all the issues regarding environmental education. Besides being an important ally for an authentically constructivist teaching methodology, the natural environment is a *field*, literal and metaphorical, in which environmental education practices can be experimented that can encourage the students to assume civil responsibility and a commitment *in the field* to protect environmental resources and, to quote Vandana Shiva (2012), to *make peace with the earth*, which is a resource because it is the matrix of resources.

References

Bertolini, P. (1980). Introduzione. In F. Frabboni, *Scuola e Ambiente* [School and Environment]. Milano: Edizioni Scolastiche Bruno Mondadori.
Black, J., & McClintock, R. (1996). An interpretation construction approach to constructivist design. In B. Wilson (Ed.), *Constructivism learning environments: Case studies in instructional design.* (pp. 25-31). New Jersey: Educational Tecnology Publications.
Bonaiuto, M. (2011). L'impatto dell'ambiente scolastico su apprendimenti e comportamenti. Il punto di vista della psicologia ambientale [The impact of the school environment on learning and behavior. The point of view of environmental psychology]. *Rivista dell'Istruzione*, *Dossier Architettura scolastica*, 4.
Calvani, A. (Ed.). (2007). *Fondamenti di didattica. Teoria e prassi dei dispositivi formativi.* [Fundamentals of teaching. Theory and practice of training devices]. Roma: Carocci.
Corsini, C., & Strongoli, R.C. (in press). Territori e terreni della ricerca formazione: un'esperienza siciliana [Territories and land of research training: a Sicilian experience]. In *La ricerca formazione: temi, esperienze, prospettive.* Milano: FrancoAngeli.
D'Aprile, G. (2016). *Tra fili d'erba e cielo aperto.* Prospettive di ricerca di educazione all'aperto in Sicilia [*Between blades of grass and open sky.* Research prospects of outdoor education in Sicily]. In L. Dozza & S. Ulivieri, (Eds.), *L'educazione permanente a partire dalle prime età della vita* [Lifelong learning from the first ages of life] (pp. 657-664). Milano: FrancoAngeli.
Dunlap, J., & Grabinger R. (1996). Rich environments for active learning in the higher education classroom. In B. Wilson (Ed.), *Constructivist learning environments: case studies in instructional design* (pp 65-82). New Jersey: Educational Technology Publications.
Frabboni, F., & Vianello, G. (1998). Presentazione [Presentation]. In F. Frabboni, G. Gavioli & G. Vianello (Eds.), *Ambiente s'impara* [Environment you learn] (pp. 5-10). Milano: FrancoAngeli.
Lave, J., & Wenger, E. (2006). *L'apprendimento situate*. Trento: Erickson.
Lebow, D. (1993). Constructivism values for instructional system design: five principles toward a new mindset. *Educational Tecnology Research and Developmen*, *Vol. 41*, *n°3*, pp. 4-16.
Persi, R. (2011). *Ambiente: conoscere per educare* [Environment: know to educate]. Milano: FrancoAngeli.
Pontecorvo, C., Ajello, A.M., & Zucchermaglio, C. (2004). *Discutendo si impara. Interazione sociale e conoscenza a scuola* [Discussing you learn. Social interaction and knowledge in school]. Roma: Carocci.
Quaglino, G. P., Casagrande, S, & Castellano, A. (1992). *Gruppo di lavoro, lavoro di gruppo* [Working group, group work]. Milano: Raffaello Cortina.
Resnick, L. B. (1995). Imparare dentro e fuori la scuola [Learn inside and outside of the school]. In C. Pontecorvo, A.M. Aiello & C. Zucchermaglio (Eds.), *I contesti sociali dell'apprendimento. Acquisire conoscenze a scuola, nel lavoro, nella vita quotidiana* [The social contexts of learning. Acquire knowledge at school, at work, in everyday life]. (pp. 61-83). Milano: LED. (Original work published 1987).
Rivoltella, P.C. (2007). Prefazione [Preface]. In A. Carletti & A. Varani (Eds.) *Ambienti di apprendimento e nuove tecnologie* [Learning environments and new technologies]. Trento: Erickson.

Savery, J., & Duffy, T. (1996). Problem based learning: an instructional model and its constructivist framework. In B. Wilson (Ed.), *Constructivism learning environments: Case studies in instructional design* (pp. 135-150). New Jersey: Educational Tecnology Publications.

Shiva, V. (2012). *Fare pace con la terra* [Making Peace with the Earth]. Milano: Giangiacomo Feltrinelli.

Strongoli, R.C. (2017). Orti didattici, spazi di innovazione scolastica all'aperto [Educational gardens, outdoor school innovation areas]. *Formazione & Insegnamento, Rivista quadrimestrale di ricerca, documentazione e critica, Organo Ufficiale della Società di Ricerca Educativa e Formativa (SIREF), anno XV, n. 02*, 343-352.

Thompson, J. B. (1995). *The Media and Modernity. A Social Theory of the Media*. Cambridge: Polity Press.

Tomarchio, M., & Strongoli, R. C. (2017). Educazione e didattica all'aperto. Una ricerca sul campo in Sicilia [Education and outdoor teaching. A research on field in Sicily]. In M. Iavarrone, P. Malavasi, P. Orefice & F. Pinto Minerva (Eds.), *Pedagogia dell'ambiente 2017. Tra sviluppo umano e responsabilità sociale* [Pedagogy of the environment 2017. Between human development and social responsibility] (pp. 239-250). Lecce: Pensa Multimedia.

Tryphon, A., & Voneche, J. (Eds.) (1996). *Piaget e Vygotskij. La genesi sociale del pensiero* [Piaget and Vygotsky. The social genesis of thought]. Firenze: Giunti.

SOCIAL COPING STRATEGIES AMONG GIFTED BOYS AND GIRLS

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Abstract

The article is focused on the social relationships of gifted children and specifically the social coping strategies they use in order to enhance their position in their school classroom. The study is focussed on diagnosed gifted pupils on the level of education ISCED2 who are mostly placed in special schools or classes for the gifted. The research is based on a five-factor version of the Social Coping Questionnaire by Swiatek (2002) applied in the Czech educational environment. The five factors include: Denying Giftedness, Social Interaction, Humour, Conformity and Peer Acceptance. Due to the repeatedly detected unstable factor structure in the questionnaire, we don´t base our results strictly on established factors in the scope of the analysis, and we focus on the items individually. The goal was to find out whether there are differences in the usage of social coping strategies by boys and by girls. 235 diagnosed gifted pupils in total were involved in the research. We found substantively significant results in the usage of social coping strategies among girls and boys. The gifted boys' strategy is humour and they declare to be better accepted by their peers than the gifted girls. The gifted girls, on the other hand, deny their giftedness; they try to conform and use their talent in the form of helping their classmates with homework and catch-up learning.

Keywords: Gifted pupils, school class, social coping strategies, gender, Social Coping Questionnaire.

1. Introduction

Social relationships are crucial for the development of a child's giftedness, because interaction with peers enables cognitive development, cultivation of social skills, development of self-concept, and creation of moral and social values (Konečná, 2010). This standpoint is supported by social models of creation of giftedness (for example Monks' psycho-social model of giftedness, etc.) in which the factor of peer environment plays a central role.

Regarding gifted children, we can encounter an opinion that they are rather isolated and unpopular in their peer group (Luftig & Nichols, 1991). In 1942, L.S Hollingworth found that students with very high IQs tend to have difficulty finding friends and being accepted by their age-mates (Jolly, 2005). Gifted children might feel very different from the others in their peer group, especially because of their personal characteristics and others' reactions towards these characteristics (Coleman & Cross, 1988). As far as cognitive features are concerned (Davis, Rimm & Sielge, 2011), let us mention, for example, intense curiosity, abstract thinking, ability to transfer knowledge, creativity, generating original ideas, excellent memory, and interest in philosophical topics. As for social-emotional features described by T. L. Cross (2011), these are represented by asynchronous personality development (conflict between one's level of intelligence and aspects such as motoric, verbal and socio-emotional development), perfectionism, emotional sensibility, multipotentiality, and intensity and profundity of experience. The results indicate that rejected children prefer symbolic representation to enactive or iconic, because they have more experience to talk with adults than peers (Sajdera, 2003).

A lot of us have an ability of self-reflection. It means conscious self-examination, self-definition and self-evaluation, on the basis of which a relationship with oneself is formed. There are some differences in the self-image of gifted individuals in relation to their classmates. The self-image as such includes a cognitive, perceptional, affective and evaluative component. However, the self-image of gifted students is much stronger focused on their attitudes, feelings, knowledge of their skills, experience, appearance or social adjustment. Self-evaluation is seen as a result of social comparison and self-examination, which is based on the observation of one´s own activity. From the pedagogical point of view the goal of self-evaluation is to become a key competence, which supports self-reliance and independence of students. It enables them to evaluate their work critically and develop themselves into

authentic personalities. This is especially important for those gifted students who have low self-esteem and a tendency towards perfectionism. When supporting students´ healthy self-esteem, teachers can help the gifted form a healthy and adequate view of their own work. (Škrabánková, 2014)

There are differences in the usage of social coping strategies by boys and by girls. These differences are attributed to not only genetic predispositions but, from the view of social science, mainly to social and cultural factors influencing the difference between boys and girls in achievements, career choices, personality characteristics, attitudes, and beliefs (Callahan, Hébert, 2014).

If we focus on selected school characteristics of gifted girls, they developed a low self-esteem and self-concept, low expectations, and self-criticism due to education and stereotypical expectations (Kerr, 1997). In her research, Swiatek (2002) found that low self-concept of gifted girls is positively developed by coping strategies that are focused on cultivation of relationships with peers. "Helping others" positively impacts self-concept in fields of school competencies, romantic relationships, and behaviour. On the contrary, emotion-focused coping strategies based on "denying giftedness," which are typical for girls, negatively impact self-evaluation. While denying giftedness positively influences self-concept in the field of close friendship, it negatively impacts self-concept in fields of school skills, social acceptance, and behaviour. Denying of giftedness is seen as the most effective strategy for managing the role of a classmate in a class environment by girls (Reed, 2008), however, at cost of hiding their giftedness from their classmates or intentional underestimating of their skills which can lead to a situation where gifted girls seem to do poorly in school (Swiatek, Cross, 2007). Rimmová (2002) further mentions that the social position of gifted girls gets worse in adolescence. According to her findings, gifted girls were less popular than both gifted and non-gifted boys and girls. She assumes that the label "gifted girl," unlike relation of the term "gifted" with boys and men, during adolescence can cause negative reactions and is associated with negative image hurting the girls' self-concept.

As far as gifted boys are concerned, it is typical that they deny such expressions of giftedness that are not compatible with masculine gender expectations. Hébert (2013) refers to "Boy Code" – a set of outdated and constricting assumptions, models, and societal rules that dictate what it means to be a man. One feature of this set of beliefs is that vulnerability, weakness, and caring emotions that are considered feminine must be camouflaged in order to survive boyhood. Along with this, other expressions of giftedness are denied, which is a possible barrier to the child's development.

Another social coping strategy that is typical for boys was described by Betts and Neihart (1988) in the scope of their typology of gifted children. These are so-called "challenging gifted children." The gifted like to correct teachers, interrupt others' talking, be sarcastic, ask about the rules, and play class clowns. These strategies are used not only in order to be part of the class, but also because of frustration with a non-supportive school curriculum. The classroom as a social and formal group is the specific environment and is perceived through the dominating climate (Orosová, Petríková, 2017). This classroom climate is formed by all pupils and it´s influenced extensively by gifted pupils.

Hébert (2013) mentions a coping strategy which, unlike the previous two, positively influences not only social relationships but also the development of giftedness. It is playing collective sports (athleticism). Athletics develops positive personal qualities, self-efficacy, resiliency, perseverance, self-regulation, goal-setting, self-esteem, and the ability to work with others through teamwork.

2. Design

The goal of the research was to find out whether there are differences between the usage of social coping strategies by boys and by girls.

The research is based on a five-factor version of the Social Coping Questionnaire (Swiatek, 2007) applied in a Czech environment. Respondents could answer the statements regarding social coping strategies in the form of a four-point scale (strongly agree, agree, disagree, strongly disagree). We assumed that by the impact of application of the questionnaire and of its translation into Czech, its factor structure would change, as it is different in various applications of the questionnaire, as the author herself and the researchers who applied and tested the questionnaire in its various versions admit (Swiatek, 1995; Rudasill, Foust, Callahan, 2007). We investigated the factor structure of the questionnaire by using exploratory factor analysis. Even though its five-factor version showed to be relatively consistent in the application of the traditionally-used method of main components Varimax rotation (26 out of 34 items fitted into five originally defined factors), the extent of KMO reached 0.653 and the solution explained 37% of variation, which we consider to be borderline values for a satisfying solution. The factors included: Denying Giftedness (DG), Social Interaction (SI), Humour (H), Conformity (C), and Peer Acceptance (PA). Due to the repeatedly detected unstable factor structure in the questionnaire, we stopped agglomerating items of the questionnaire into established factors in the scope of the analysis, and

we focused on the items individually, as independent statements to which respondents expressed the extent of agreement. The names of the factors are used only for clear interpretation of the data.

235 gifted pupils from the Czech Republic in total were involved in the research. By gifted pupil, we mean an individual who was diagnosed in a pedagogical and psychological counselling centre as gifted. The research sample of gifted pupils was sought out by e-mail or phone communication with school principals, which were identified by the National Institute for Further Education and its project Giftedness Support System. As far as other characteristics of the sample are concerned, they were mostly pupils who go to a second stage of primary education institution (ISCED2). There were 85 girls (36%) and 150 boys (64%) aged from 10 to 16 years. The average age in the research sample is 13 years. 161 pupils (69 %) attend the types of schools oriented toward the education of gifted pupils (8-year grammar school, lyceum, or elementary school oriented toward the education of gifted pupils) and 74 pupils (31 %) attend ordinary elementary school.

Given the fact that this is the available selection of respondents, we do not aspire to generalize our findings, and in the scope of the analysis, we do not apply inferential statistics. We focus on a gender-oriented comparison of the results targeting on factually important differences in the percentage of positive answers.

3. Results

As was already mentioned, we focused on the differences in the framework of individual items of the questionnaire. Only items in which we detected over a 10% difference in answers between the girls and the boys were put in the presented article, as this indicates substantively significant (thus, generally important) differences in the compared groups (Mareš, Rabušic, Soukup, 2015, pp. 250).

The results of the analysis are summed up in Table 1. The statements include their original classification into factors (DG, SI, H, C, PA) and percentage expression of differences between answers of the boys and the girls (ε).

Let us focus on the statements and strategies which are typical for the gifted boys. The biggest difference was found in item "I tell a lot of jokes in school" (the difference between the boys and the girls was 27%, with the boys showing higher numbers), in the scope of the Humour factor. Other differences were found in the Peer Acceptance factor, precisely in two statements concerning the popularity of gifted children (differences being 16% and 12.6%). Thus, it seems that the boys, in spite of their giftedness, perceive their position among their peers in class more positively than the girls. The last important difference with boys showing higher numbers was detected in the statement "People think I am a class clown" (difference of 12.3%) in the Humour factor.

Among the gifted girls, there were more positive answers for the statements in the Conformity factor in comparison with the boys. The most remarkable was the item "I try to behave the same as other pupils" with a difference of 25.6%, with the girls showing higher numbers. It is important for the gifted girls to be popular (21% difference), which is why they try to look the same as other pupils (17.8% difference). The item "I am concerned about my popularity" (13% difference) supports the expression of the importance of being a part of the peer group.

The differences were also found in two statements in the Social Interaction factor, precisely in the strategies by which the gifted girls try to help their classmates with catch-up learning in their free time (15.1% difference) and help them with homework (14.9% difference).

The last social strategy which is more remarkable in the girls, as our research shows, is the denial of giftedness in the eponymous factor. The girls think that there are many other people who are more gifted than themselves (13.7% difference), that people are wrong when they think that they are gifted (13.3% difference), they do not think that they are gifted (12.2% difference) and finally, they assume that when they grow up and school becomes more demanding, people will stop thinking that they are gifted (11.9% difference).

Table 1. Differences between the boys and the girls.

Item	Girls		Boys		ε
	n	%	n	%	
DG - I don't think that I am gifted.	33	38.8	40	26.7	12.2
DG - People think that I am gifted, but they are wrong.	30	35.3	33	22.0	13.3
DG - When I grow up and school will be more demanding, people will stop thinking that I am gifted.	43	50.6	58	38.7	11.9
DG - There's many people who are more gifted than I am.	74	87.1	110	73.3	13.7
SI - People come to me to consult homework.	45	52.9	57	38.0	14.9
SI - I devote part of my free time to catch-up teaching.	27	31.8	25	16.7	15.1
H - I tell a lot of jokes in school.	25	29.4	86	57.3	-27.9
H - People think that I am a class clown.	6	7.1	29	19.3	-12.3
C - I am not concerned about my popularity.	70	82.4	104	69.3	13.0
C - I try to behave the same as other pupils.	49	57.6	48	32.0	25.6
C - I try to look the same as other pupils.	31	36.5	28	18.7	17.8
C - In the long term, it is not important to be popular.	73	85.9	97	64.7	21.2
PA - My giftedness is not a threat to my popularity.	55	64.7	121	80.7	-16.0
PA - If I was not gifted, I would fit in better.	21	24.7	56	37.3	-12.6

4. Discussion

We found that it is typical for the gifted boys to use humour as a social coping strategy. The most important difference was found in the statement "I tell a lot of jokes." Thanks to this strategy, the gifted boys improve their social status in class and they do not have to deny their giftedness. The boys, according to their statements, become so-called class clowns, which, unlike the previous strategy, can lead them into the denial of their giftedness. Our results are in accordance with the application of the same questionnaire by Swiatek (2002), who also found that humour is boys' typical strategy. This finding can be related to the rules of behaviour (see "Boy Code"), which are typical for adolescent boys (Hébert, 2013), or with the strategy of "challenging gifted pupil" which was described by Betts and Neihart (1988) in the scope of their typology of gifted pupils.

Other differences were found in the Peer Acceptance factor, precisely in two statements concerning the popularity of gifted children. Thus, it seems that the boys, in spite of their giftedness, perceive their position among their peers in class more positively than the girls. The gifted boys have typically higher confidence and self-concept than the gifted girls, which is generally determined by the influence of family and school education which focuses on the gifted boys' development more (see Hébert, 2013; Kerr, 1997).

The gifted girls show conformist behaviour more often. According to our findings, it is important for them to be popular, so they want to look like their peers. To achieve this, they use two strategies. The first is helping others (the Social Interaction factor), where they state that they try to teach their classmates so that they can catch up and help them with homework. The second strategy is denying giftedness in the framework of the eponymous factor. The girls think that there are many other people who are more gifted than themselves, that people are wrong when they think that they are gifted, they do not think that they are gifted, and, finally, they assume that when they grow up and school becomes more demanding, people will stop thinking that they are gifted. Here our findings match with those of Swiatek (2002), who found that the denial of giftedness can be found more often in girls than in boys. The mentioned conclusions support the statement that the girls express more desire to fit in, hiding their giftedness and suppressing natural expressions (Lolly, 2005).

5. Conclusion

The goal of the research was to find out whether there are differences between the usage of social coping strategies by boys and by girls. We found that the gifted boys' strategy is humour and that they are better accepted by their peers than the gifted girls. The gifted girls, on the other hand, deny their giftedness; they try to conform and use their talent in the form of helping their classmates with homework and catch-up learning. Because most of these strategies do not lead to full-fledged development of giftedness, it is necessary to respect gender-neutral approaches in the education of gifted girls and boys.

Acknowledgment

References

Betts, G.T. & Neihart, M. (1988). Profiles of the Gifted and Talented. *Gifted Child Quarterly*. 11, 2, 248 – 253.

Callahan C.M. & Hébert, T.P. (2014). Gender Issues. In Plucker, J.A. & C.M. Callahan (Eds.), *Critical Issues and Practices in Gifted Education* (267 – 280). Texas: Prufrock Press.

Coleman, L. J., & Cross, T. L. (1988). Is being gifted a social handicap? *Journal for the Education of the Gifted,* 11, 41–56.

Cross, T. L. (2011). *On the Social and Emotional Lives of Gifted Children.* USA: Prufrock press.

Davis G. A., Rimm S. B. & Sielge, D. (2011). *Education of the Gifted and Talented.* New Jersey: Pearson.

Hébert, T.P. (2013). Gifted Males. Understanding Their Challenges and Honoring Their Potential. In Callahan, C.M. & Herberg-Davis, H.L. (Eds.), *Fundamentals of Gifted Education – Considering Multiple Perspectives* (331 – 342). UK: Routledge.

Jolly, J. L. (2005). The Woman Question: an historici overview of the education of gifted girls. In Johnsen, S.K., Kendrick, J. (Eds.), *Teaching and counseling gifted girls* (3 – 8). USA: Prufrock press.

Kerr, B.A. (1997) *Smart girls: A new psychology of girls, women, and giftedness.* Scottsdale: Great Potential Press.

Konečná, V. (2010). *Sebepojetí a sebehodnocení rozumově nadaných dětí.* Brno: Masarykova univerzita.

Luftig, R. L., Nichols, M. L. (1991) An Assessment of the Social Status and Perceived Personality and School Traits of Gifted Students by Non-Gifted Peers. *Roeper Review*, 13, 3, 148 - 154.

Mareš, P., Rabušic, L., & Soukup, P. (2015). *Analýza sociálněvědních dat (nejen) v SPSS*. Brno: Masarykova univerzita.

Orosová, R. & Petríková, K. (2017). Influence of Experiential Education in Pre-Graduate Training of Teachers on the Classroom Climate – The Conflicts. In *Turkish Online Journal of Educational Technology (155-162), November 2017, Special Issue for INTE 2017*.

Rudasill, K. M., Foust, R. C., & Callahan, C. M. (2007). The Social Coping Questionnaire: An Examination of Its Structure With an American Samle of Gifted Adolescents. *Journal for the Education of the Gifted.* 30, 3, 353-371.

Sajdera, J. (2003). *Dziecięce wyobrażenia w kontekście rówieśniczych relacji.* Kraków: Wydawnictwo Naukowe Akademii Pedagogicznej.

Swiatek, M. A. & Cross, T. L. (2007). Construct Validity of the Social Coping Questionnaire. *Journal for the Education of the Gifted.* 30, 4, 427-449.

Swiatek, M. A. (2002). Social Coping Among Gifted Elementary School Students. *Journal for the Education of the Gifted.* 26, 1, 65-86.

Škrabánková, J. (2014). *Talent. Is It Really a Gift?* Ostrava: Ostravská univerzita.

ENVIRONMENTAL EDUCATION IN ECUADOR: CHALLENGES AND TRANSFORMATIONS

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Abstract

The main objective of this chapter is to reflect about the challenges and transformations that Ecuador faces on Environmental Education. In 2008, the new Constitution recognized the Rights of Nature, in order to restore the ecological footprint. Good Living is a philosophical and political worldview of kiwicha indigenous peoples of Andean Region, where human beings are interconnected with our planet Earth and the whole cosmos. For this reason, the work uses the transdisciplinary methodology to integrate scientific knowledge with ancestral wisdom, in order to combine an ecology of knowledge. As result, the research aims to develop a critical environmental awareness to advance in the National Environmental Education Plan. Some eco-pedagogical projects have been formulated at the National University of Education of Ecuador to contribute in the achievement of the Sustainable Development Goals lead by the United Nations for the year 2030. As main conclusion, Environmental Education in Ecuador seeks to bio-literate citizens to face the complex civilizing challenges of the Anthropocene, by teaching how to feel-think-act in harmony with the co-evolutionary processes of nature.

Keywords: Environmental education, good living, eco-pedagogy, bio-literacy, transdisciplinary.

1. Introduction

Currently, different representatives of the Ministry of Education, the Ministry of Environment, the National University of Education (UNAE) and the University of IKIAM (among other actors), are collaborating to develop and implement the National Environmental Education Program. In this context, the main objective of this chapter is to reflect about the challenges and transformations that Ecuador faces on Environmental Education (EE). A transdisciplinary methodology is used to combine an ecology of knowledge within scientific knowledge and indigenous spiritual wisdom. Promoting and strengthening environmental awareness in the educational community implies an integral and holistic approach whose epistemological focus is based on emotions, values, altruistic sense, innovation, and educational quality. Training a responsible citizenship to face socio-ecological challenges is fundamental to build a society committed to the welfare of present and future generations (Freire, 1971). For this reason, this chapter reflect on the experiences of public policies carried out in Ecuador on EE to help achieve the Sustainable Development Goals (SDGs) lead by the United Nations for the year 2030 (United Nations, 2015).

2. The rights of nature in the 2008 constitution and the national plan for good living

Ecuador lives a unique historical period: in a short time have taken giants steps. The Law on Environmental Management of Ecuador was created in 1999, and Article 2 states: "environmental management is subject to the principles of solidarity, co-responsibility, cooperation, coordination, recycling and reuse of waste, use of environmentally sustainable alternative technologies and respect to traditional cultures and practices." Since then, a progressive process of environmental awareness has been developed, that has been translated into different state policies, scientific research, formal and non-formal education programs, as well as greater dissemination in the media. The current Constitution of 2008 recognizes the Rights of Nature in its seventh chapter, as follows:

> **Article 71**. Nature, or Pacha Mama, where life is reproduced and occurs, has the right to integral respect for its existence and for the maintenance and regeneration of its life cycles, structure, functions and evolutionary processes. All persons, communities, peoples and nations can call upon public authorities to enforce the rights of nature. To enforce and

interpret these rights, the principles set forth in the Constitution shall be observed, as appropriate. The State shall give incentives to natural persons and legal entities and to communities to protect nature and to promote respect for all the elements comprising an ecosystem.

Article 72. Nature has the right to be restored. This restoration shall be apart from the obligation of the State and natural persons or legal entities to compensate individuals and communities that depend on affected natural systems. In those cases of severe or permanent environmental impact, including those caused by the exploitation of nonrenewable natural resources, the State shall establish the most effective mechanisms to achieve the restoration and shall adopt adequate measures to eliminate or mitigate harmful environmental consequences.

Article 73. The State shall apply preventive and restrictive measures on activities that might lead to the extinction of species, the destruction of ecosystems and the permanent alteration of natural cycles. The introduction of organisms and organic and inorganic material that might definitively alter the nation's genetic assets is forbidden.

Article 74. Persons, communities, peoples, and nations shall have the right to benefit from the environment and the natural wealth enabling them to enjoy the good way of living. Environmental services shall not be subject to appropriation; their production, delivery, use and development shall be regulated by the State.

In general terms, the Constitution of 2008 states that the full exercise of state supervision over the environment and the responsibility of the citizens in their preservation must be articulated through a decentralized national system of environmental management. In this way, public policies provide the basis for an inter-sectorial and participatory management of shared responsibility. Autonomous governments must deploy efficient mechanisms in their respective management areas and the industrial sectors of private space must assume their role in consonance with social welfare and nature.

Regarding the educational system, Article 27 states: "education will be centered on the human being and will guarantee its holistic development, within the framework of respect for human rights, the sustainable environment and democracy; it will be participatory, obligatory, intercultural, democratic, inclusive and diverse, of quality and warmth; it will promote gender equity, justice, solidarity and peace; it will stimulate critical thinking, art and physical culture, individual and community initiative, and the development of skills and abilities to create and work." Education is a human right and a priority area of Ecuadorian public policy to ensure equality and social inclusion, so is an essential condition to build the Good Living.

Good Living is a political and philosophical proposal based on the *Sumak Kawsay*, an ancestral Kichwa worldview that understands the human being as an integral and interdependent part of their social and natural environment (Acosta, 2013). For this reason, the government of Rafael Correa prepared the National Development Plan (2007-2010), the National Plan for Good Living (2009-2013) and the Good Living National Plan (2013-2017), in order to mark the way to consolidate Good Living. Among the objectives and public actions of these plans, the promotion of Good Living in schools and universities constitutes a firm step to strengthen EE in Ecuador. In this sense, the National Plan for Good Living (2013, p. 67) states that "the development of the productive forces focuses on the training of human talent and the generation of knowledge, innovation, new technologies, good practices and new tools for production, with emphasis on bio-knowledge and its application to the production of ecologically sustainable goods and services." Thus, the education system in Ecuador is confirmed as a key to promote research, training, and community outreach, in order to help preserve a harmonious relationship between society and nature element (Collado, 2016a).

3. The transdisciplinary methodology: integrating the good living into academic discussion

EE requires a transdisciplinary epistemological approach to understand the complexity of ecosystems, but also to analyzes the ecological footprint left by human beings in our planet Earth (Wackernagel & Ress, 1996). Consequently, this chapter addresses the socio-ecological problems presented in the SDGs of the United Nations from the transdisciplinary methodology proposed by nuclear physicist Basarab Nicolescu (2008) and the "Complexity Theory" formulated by sociologist Edgar Morin (1999). This epistemological combination is characterized by creating an "ecology of knowledge" that is in, between, and beyond scientific and academic disciplines. It also implies openness to the inner spiritual self-awareness, worldviews of indigenous peoples, and other perceptive, affective, emotional, rhetorical, poetic, epistemic, creative, artistic, cognitive, and philosophical dimensions of our human condition.

The transdisciplinary methodology of Nicolescu (2008) is based on quantum physics and comprises three axioms: multiple levels of reality (ontology), the logic of the Included Middle, and knowledge as complex and emergent (epistemology). Those axioms support our vision of the human condition is provisional and open-ended in the profound mysteries of the Universe. In turn, the Complexity Theory of Morin (1999) formulates seven interrelated and complementary principles based on natural phenomena: 1) Systemic or organizational principle, 2) Holographic principle, 3) Retroactive circle principle, 4) Recursive circle principle, 5) Self-eco-organization principle: autonomy and dependence, 6) Dialogical principle, and 7) principle of reintroduction of knowledge in all knowledge. In sum, the main intention of those principles is to identify fundamental problems that are overlooked or neglected in education, and should be taught in the future.

Figure 1. Epistemological combination of transdisciplinary methodology with Complexity Theory.
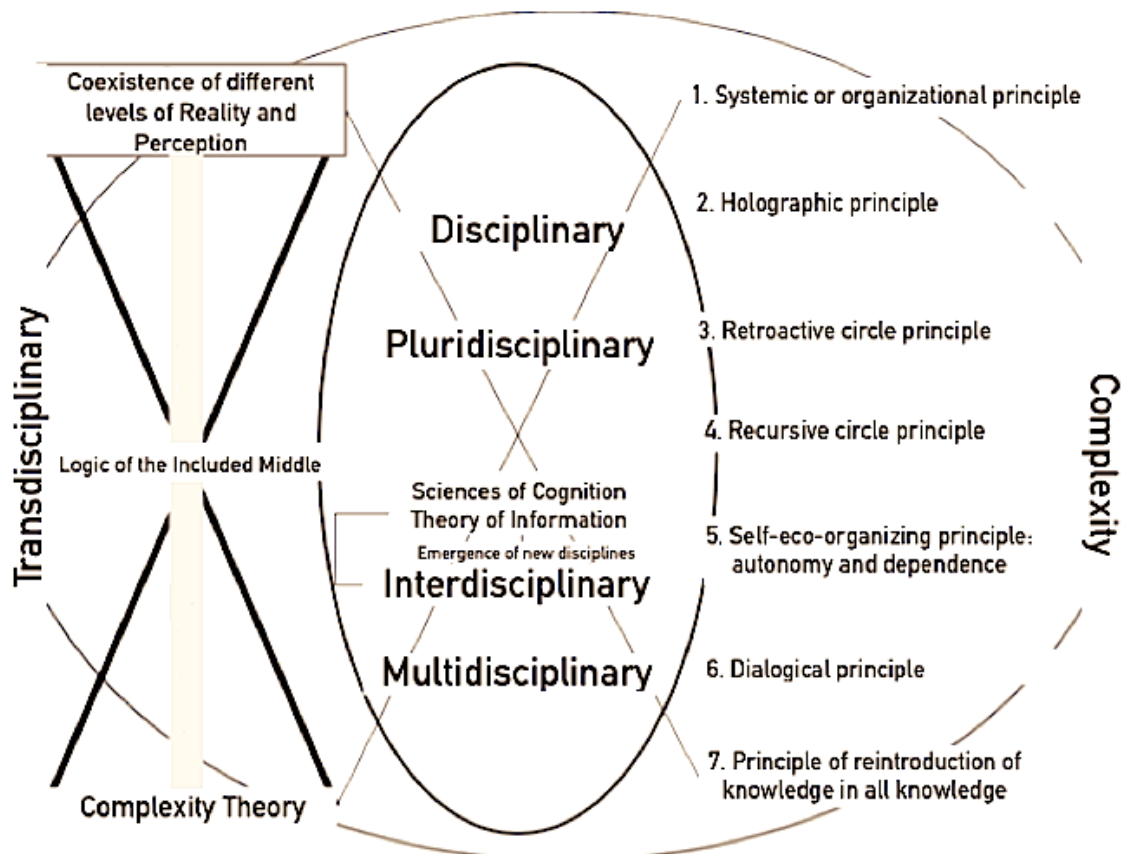
As it can be appreciated in Figure 1, the theoretical-methodological combination adopted in this research seeks to develop an epistemological tool to train students from primary school to university. This methodological and theoretical combination help us to recognize different ontological and perception levels of our reality. It represents an important epistemological tool to develop a sustainability mindset in EE, where students can learn with activities focused on *feeling-thinking-acting* in harmony with other people, the planet, and the *sacred* (Collado, 2017). They learn different levels of reality compose our own identity: cosmic, planetary, regional, national, and local. That is why the achievement of the SDGs requires that all educators promote a transdisciplinary mindset with projects, exercises, and activities focused on practical applications in the personal and contextual reality of their students (Collado, 2016b). Learning to understand all dimensions of sustainable development requires this complex and transdisciplinary approach in EE to solve problems and develop a sustainability mindset.

4. Results of the national environmental education program in Ecuador

Speaking about EE in Ecuador means emphasized that it is a pioneer country in the constitutional recognition of the rights of nature. But the time has come to take another step. A legal debate must be established to recognize the rights of each river, lake, mountain, etc. India and New Zealand are two

examples of this initiative, recognizing with the rights of legal persons to the Whanganui, Ganga and Yamuna rivers. In the same way that transnational corporations are considered as legal entities, the different natural phenomena also need to be recognized with legal rights. This idea opens a space of "environmental ethics" and "ecological economy," both fundamental to build the Good Living in the 21st century.

Since July 2017, the Ministry of Education forms the Advisory Committee for the construction and implementation of the National Environmental Education Program "*Land of Everybody*" (Tierra de todos) in which the delegates of the Ministry of Environment, the National University of Education, and the IKIAM Amazon Regional University participate. The Committee is composed of professionals from different disciplines and meets periodically in order to meet different goals related to its five axes of articulation:

1. Conceptual basis of the Environmental Education Program.
2. Transversalization and strengthening of the Current School Curriculum.
3. Implementation of initiatives and good environmental practices in the education sector.
4. Teacher training.
5. Monitoring and evaluation methodologies.

As result, this research aims to develop a critical environmental awareness to advance in those five axes lead by the Advisory Committee. All of them are good examples of eco-pedagogical projects focused in the achievement of the SDGs lead by the United Nations for the year 2030. Those eco-pedagogical experiences have sought to claim a "Pedagogy of the Earth" that reforms the learning methods of formal and institutionalized schooling. While school logic is generally discourse-centered, educational logic emphasizes in the process. In this sense, the educator Moacir Gadotti (2000, p. 47) points out that "it is not an overhaul, but a true structural transformation in the way of thinking, planning, implementing, and managing basic education."

For this reason, I believe that all educational organizations in Latin America and the world that seek to develop EE experiences should focus on promoting the cosmic miracle of life on our planet. That is, they must develop experiences that make students aware of their social and environmental context, as proposed by the Earth Charter (2000) and is being done in Ecuador, in accordance with the 2008 Constitution and the National Plan of Good Living presented before. In other words, this eco-pedagogical philosophy must transform entire citizenship from the root: making them affectively responsible for current ecological and civilizational crisis.

5. Bio-literacy conclusions

As main conclusion, Environmental Education in Ecuador seeks to bio-literate citizens to face the complex civilizing challenges of the Anthropocene (Steffen, Crutzen & McNeill, 2007), by teaching how to feel-think-act in harmony with the co-evolutionary processes of nature. From my experience as a professor at the National University of Education (UNAE) of Ecuador I have sought to raise awareness and sensitize my students through bio-literacy approaches that embrace the challenge of integrating our human actions into the inter-systemic co-evolution processes of nature. Implementing this bio-literate vision means learning from ecosystems, since they represent true sustainable communities of plants, animals, and microorganisms. According to Fritjot Capra (1998, p. 307): "being ecologically literate, being *eco-literate* means understanding the organizational principles of ecological communities (ecosystems) and using those principles to create sustainable human communities." This bio-literacy vision should be implemented in the educational institutions, but also in the field of economics, politics, and business. This is the very meaning to face the challenges and to transform Ecuadorian reality.

Before concluding, I want to complement the four pillars of education proposed in the famous report "Education holds a treasure" of UNESCO, chaired by Jacques Delors (1999), to say that Environmental Education must be based on four key ingredients: 1) learn to know the biophysical limits of nature; 2) learn to make a sustainable use of material and energy resources; 3) learn to live together with a fair and equitable distribution of natural assets; and 4) learn to be responsible with the common good of all humanity, our Earth-Homeland (Morin & Kern, 2005). These four pedagogical keys of "ecological literacy" or "bio-literacy" must guarantee the legitimacy and intentionality of the educational processes that lead to environmental citizenship. It will be of little use to update the textbooks if the discourse is not adapted to a socio-ecological reality that is outside the classroom. The procedures, instruments, and pedagogical contents have to be created and recreated day by day, based on the requirements established by the culture of planetary sustainability.

To conclude, it is necessary to reflect on human training in the 21st century. It is urgent to develop critical pedagogies that open new paths to the very interiority of our being: where our feelings,

emotions, and daily experiences build sustainable and regenerative development from the reality of everyday life. That is why I invite the readers to ask themselves: What is the role of Environmental Education to abolish the ecological and civilizing collapse? How can Environmental Education help us to feel, intuit and emotionally vibrate to imagine, invent, and create "other possible worlds"? How can we bio-literate citizens to achieve a sustainable and regenerative development that will lead us to fulfill the SDGs by the year 2030? How can Environmental Education contribute to achieving the objectives of the National Plan for Good Living in Ecuador?

References

Acosta, A. (2013). *El Buen Vivir. Sumak Kawsay, una oportunidad para imaginar otros mundos.* Barcelona: Icaria.

Capra, F. (1998). *La trama de la vida. Una nueva perspectiva de los sistemas vivos.* Barcelona: ANAGRAMA.

Collado-Ruano, J. (2016a). Paradigmas epistemológicos en Filosofía, Ciencia y Educación. Ensayos Cosmodernos. Saarbrücken: Editorial Académica Española.

Collado-Ruano, J. (2016b). Cosmodern Education in the Sustainable Development Goals, A Transdisciplinary and Biomimetic Approach from the Big History. *TheATLAS*. vol. 6, pp. 98-122.

Collado-Ruano, J. (2017). Learning to Co-evolve in the Anthropocene: Philosophical Considerations from Nature. *Azimuth. International Journal of Philosophy,* n. 9. pp.17-30.

Constitution of Republic of Ecuador of 2008. https://www.cec-epn.edu.ec/wp-content/uploads/2016/03/Constitucion.pdf

Delors, J. (coord.) (1999). *Educação: Um Tesouro a Descobrir. Relatório para a UNESCO da Comissão Internacional sobre Educação para o Século XXI.* UNESCO.

Freire, P (1971). *Pedagogía del oprimido.* Montevideo: Ed. San Santiago.

Gadotti, M. (2000). *Pedagogía da Terra.* São Paulo: Editora Peirópolis, 2000.

Morin, E. (1999). *Los siete saberes necesarios para la educación del futuro.* París: UNESCO.

Morin, E., & Kern, A. (2005). *Tierra-Patria.* Barcelona: Kairós.

Nicolescu, B (2008). *O Manifesto da Transdisciplinaridade.* São Paulo: TRIOM.

Plan Nacional del Buen Vivir (2013). *Plan Nacional de Desarrollo. Plan Nacional para el Buen Vivir 2013-2017.* Quito: Senplades.

Steffen, W., Crutzen, P., McNeill, J. (2007) The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature? *AMBIO: A Journal of the Human Environment,* 36 (8): 614-621.

The Earth Charter. (2000) *The Earth Charter.* San José: CTI. http://earthcharter.org/discover/download-the-charter/

United Nations (2015). *Transforming our World: The 2030 Agenda for Sustainable Development.* Retrieved in February 3, 2018: https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf

Wackernagel, M., & Ress, W. (1996). *Our Ecological Footprint. Reducing Human Impact on the Earth.* Gabriola Island: New Society Publishers.

A PROBLEM-BASED LEARNING APPROACH TO DIVERSITY

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Abstract

The key motivation for the paper was to immerse students in the theme of "Diversity" as an aspect of human resources, within small international groups. Diversity is a positive approach to diversity management and the systematic, fair and objective management of workforce diversity. Diversity can be triangulated into discrimination, difference and dominance.

The objective was to achieve a better understanding of disabilities, by working on a real life case study. Students in this study, attended a conference with other students from various European countries, working together, to find a solution to the case study during the three day time frame.

Students needed to be open minded, willing to listen to the opinion of others, to build upon their understanding of culture and behaviours and immerse themselves in a different way of life. Students working in small groups, tackled the problem and tried to solve it. The method was problem-based learning using the seven step approach of clearing difficult or unclear words and terms, defining the problem, analyzing the problem, systematic reorganisation (constructing a mind map), defining aims of learning, searching information and reporting.

After receiving the case study, the students looked initially at the facts, they then defined disability, establishing whether the case was either an inequality or an injustice. It then looked at three key areas recruitment procedures, company looks policy and communication. These three key areas were fully investigated in pedagogical terms and whether the company selection process was appropriate and standardised, if the training process was appropriate and if the human resource department gave the staff member bad advice i.e. contrary to company policy. The students set about investigating if the looks policy discriminated in law. The communication process looked to see if the manager behaved appropriately, if the company had a communication problem or if it was simply due to inadequate line manager training.

Through a rigorous enquiry into European legislation and the exploration of selection procedures in different countries through similarities and differences. In order to determine if the case was a result of the disability, discrimination or harassment. Following the investigation, students then determined that the case was actually a case of unlawful harassment and discrimination. The students highlighted the key findings and outcomes of their case study through a group poster presentation. Each student having an opportunity to articulate their findings to the wider audience.

Keywords: Diversity, disability, discrimination, harassment.

1. Introduction

The two key aims of problem-based learning (PBL) is firstly, to establish a cohesive and an integrated knowledge of a realistic problem. Secondly, the application of problem solving skills by acquiring and utilizing their knowledge to this problem. According to (Adams, 2014), students and their prospective employers value PBL because it can be subject specific or generic in nature and can enhance student topic knowledge at the same time as giving them a toolbox of work related skills. PBL is a didactic method which is a hybrid between education and working or practice, it encompasses active learning in a multi-disciplinary way.

2. Objectives

The objective was to determine if a group of students from different cultural backgrounds could form a successful group and find a solution to a problem within the topic of diversity, using a case study

i.e. disability. The study hoped to establish if the process and participation in PBL, could improve upon critical thinking skills and working in an unstructured way, leading to a better way of learning.

2.1. Purpose and research question

The study aimed at investigating the students' understanding of diversity within their own countries and specifically, the topic of disability, using the conference as the setting. To attain the shared purpose, the following research questions were identified;

1. What support do you need as a teaching practitioner to adapt a PBL approach?
2. What support do your learners need to be an effective PBL learner?

2.2. Participants

The study was made possible by the voluntary participation of approximately 60 third level students in the HUMINT Student Conference on Diversity Management, with the disability subgroup of ten students (both genders) studying business or HRM from the following: University of Applied Sciences BFI Vienna, Austria, University College, Leuven, Belgium, Metropolia University of Applied Sciences, Finland, University de Bretagne Occidentale, Quimper, France, St. Mary's University College, Belfast and Saxion University of Applied Sciences, the Netherlands.

3. Theoretical framework

As part of the European Human Resource conference, groups of students worked on a disability case study. This setting gave the groups the opportunity for enhanced cultural experience, through dialogue with other nationalities, working together and learning about their own approach to group work. (Beetham, 2016) discusses the 'Open Community' and finding and evaluating relevant, quality, rich media to enhance knowledge delivery and promote student engagement from a range of creative sources and in doing so it developes and improves upon 'Information' and 'Media' Literacy skills. The group used the seven-step method of PBL.

i. Clearing vague or unclear words and terms
ii. Defining the problem
iii. Analysing the problem
iv. Systematic reorganisation: constructing a mind map
v. Defining the aims of learning
vi. Searching information
vii. Reporting

4. Research methodology

4.1. Research design

The study adopted qualitative case study research design, because it provided the opportunity to study diversity within their contexts (Baxter and Jack 2008, 544). The group was issued with a case study based on the company Stevenson and Hennessey Clothing Company. The fictitious company name and fictitious student name Zelda Law was used as the background to discuss the young student with a prosthetic arm and her disability case. The tutor explained any unknown wording, statements and concepts, the problem was defined and the group then had to brainstorm. The structure of the brainstorm was a three-pronged approach – personal: the case viewed from Zelda Law's perspective, human resources: the case viewed from the human resource management (HRM) department and finally to consider if there would be a different national interpretation of the case. The students then formulated and performed self-study assignments to find answers.

4.2. Research methods

Students gathered information and relevant data and discussed these in the groups using content analysis and applying narratives. An unstructured interview with a guest speaker, purposively chosen because of his subject matter knowledge, was also used. The case study "empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem." (Savery, 2006).

4.3. Quality issue

The case study research before and during the conference, as well as the questions with the (SME) Subject Matter Expert were used to triangulate the methods. This according to (Yeasmin and Rahman 2012, 154) is a strategy which can assist the researchers to increase the validity of evaluation and their findings.

5. Role of the tutor

In PBL, the Tutor becomes the Facilitator, stimulating creativity and engaging the students in the educational process. The Tutor is not transferring information but rather directing the students to read specific topic literature and documentation, seeking primary research subject matter expert advice and by developing their critical literacy skills through qualitative secondary research on the internet. In this study, the tutor discussed the various levels of diversity management such as workforce diversity, behavioral diversity, structural diversity and business/global diversity.

6. Traditional system versus PBL

The traditional focus is on the knowledge and is the learning is being directed and led by the Tutor. In this way, the Tutor has control of the room and content is defined and prescribed by them, whilst the student takes a more passive role often as a scribe. Whereas, in the PBL approach the student has an active role, the content is determined by the research used to tackle the problem, the students are responsible for the learning and focus is on the student skills and attitude, as is the outcome.

Figure 1. Gold Standard PBL, Buck Institute for Education, 2015.

Problem-Based Learning requires students to work <u>collaboratively</u> in teams to seek solutions to multi-layered, real-life problems. This approaches compels students to consider issues more broadly, and acknowledge, perhaps for the first time, alternative views of the topic/case study.

7. Scaffolding the PBL process

The study and approach used the following series of guided questions and thinking time to derive at a collective decision:

Facts and disability
1. What are the facts of the case?
2. Was Zelda Law disabled?
3. What is a disability?
4. Did the company (with their attitude) make Zelda Law disabled?
5. Was there an inequality or an injustice?

Recruitment Procedure
1. Was the company selection process appropriate?
2. Did the company promote equality of opportunity?
3. Was Zelda's recruitment systematic, fair and objective?
4. Did they follow the correct procedures i.e. job description, person specification, recruitment advertising, application process, shortlisting & interviewing, selection testing?
5. Was her training appropriate?
6. Did the HRM department give her bad advice i.e. contrary to company policy?

Looks Policy
1. Can the company have a looks policy?
2. Is a looks policy discriminatory in law?
3. Did the looks policy discriminate against Zelda?

Communication
1. Was there a problem with the company's communication system?
2. Did the line manager behave appropriately?
3. Was there a problem with the line manager training?

Case
1. Does Zelda Law have a case against the company?
2. Was she discriminated against because of her disability?
3. Was she discriminated against, indirectly discriminated against, harassed or victimized?
4. What legislation helps you answer these questions?

Comparison – Introduce Riam Deane
1. Is there European legislation appropriating to the case?
2. Would the selection procedure have been carried out differently in different countries?
3. What is the relevant legislation in your country regarding the case?
4. Would the court have found a case of harassment?

8. Discussion

PBL promotes active learning, engages students and allows for higher order thinking (Savery, 2006). In this study, the students explored a real-world problem and sought to find answers through the completion of a case study. It was important to place the activity as part of a case study and therefore within a particular conceptual or cognitive framework. On the penultimate day the tutor revealed the true identity of Zelda Law in the case study, as Riam Dean, a British law student with a prosthetic limb, who was removed from her job at a London Abercrombie & Fitch shop floor becuase she violated their "looks' policy". The group then reached the conclusion that the case was a discrimmination case rather than a disability case. Dean's dismissal was a consequence of unlawful harassment arising "not from treating the claimant differently from non-disabled associates [in enforcing the 'look policy'], but in treating her the same in circumstances where it should have made an adjustment" according to (Topping, 2009).

The opportunities for replication possibilities within a larger audience come through dissemination in the student own educational establishments. The longitudinal study are though papers such as the END conference. The case study finished with a poster session, to showcase the students' work and the team pitching their solution to the case.

Figure 2.
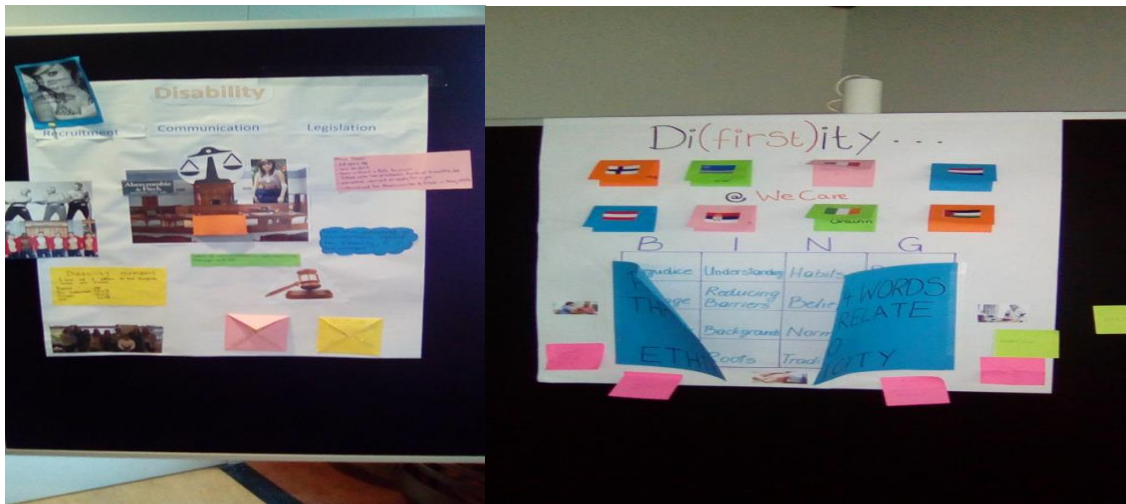
9. Conclusions

PBL is a creative, innovative, teaching approach. According to (Patton & Robbin, 2012) projects also draw students and topics closer together so that students experience learning as an integrated whole, rather than a series of separate silos and applying their knowledge in a directed manner. The project enabled the students to engage with industry, the community and business. PBL helped bridge the divide between intellectual ability and practical skills and merge the pedagogical practices into a unified approach.

References

Adams, S. (2014). The 10 skills employers most want in 2015 graduates. Forbes. Retrieved March 19, 2018, from URL: http://www.forbes.com/sites/susanadams/2014/11/12/the-10-skills-employers-mostwant-in-2015-graduates/

Baxter, P. &. Rahman (2008). Qualitative case study methodology: Study design and implementation for novice researchers. The Qualitative Report, 544-559.

Beetham, H. (2016). Digital capabilities the 6 elements defned. Jisc. Retrieved March 21, 2018, from URL: https://digitalcapability.jiscinvolve.org/wp/files/2015/06/1.-Digital-capabilities-6-elements.pdf

Harrison, P. (2017). Thousands share their invisible disabilities on Twitter. BBC. Retrieved March 15, 2018, from URL: http://www.bbc.ac.uk/news/

Larmer, J. et.al. (2015). Setting the standard for project based learning: A proven approach to rigorous classroom management. Buck Institutute for Education. Retrived February 15, 2018, from URL: file:///BIE_GS_Essential_Proj_Design_Elements.pdf

Patton, A. & Robbin, J. (2012). Work that Matters: A teachers guide. Retrieved on March 21, 2018, from URL: https://www.innovationunit.org/wp-content/uploads/2017/04/Work-That-Matters-Teachers-Guide-to-Project-based-Learning.pdf

Savery J. R., Duffy, T. M. (1995) Problem based learning: An instructional model and its constructivist framework. Educational technology 35 (5), 31-38, 2434.

Savery, J. R. (2014). Project-based learning and problem-based learning. Retrieved on March 21, 2018, from URL: https://www.teachermagazine.com.au/articles/problem-based-learning-and-project-based-learning

Sevin-Baden, M. (2003). Facilitating Problem-Based Learning: illuminating perspectives. Maidenhead: Open University Press.

Topping, A. (2009). Discrimination at Work. The Guardian newspaper. Retrieved on February 08, 2018, from URL: https://www.theguardian.com/money/2009/aug/13/abercrombie-fitch-employee-case-damages

Yeasmin, S. &. (2012). Triangulation research methods as the tool of social science research. BUP Journal, 154-163.

DISABILITY IN THE SYLLABUS:
EXPLORING TEACHERS' WILLINGNESS, EDUCATIONAL STRATEGIES AND TEACHING MEDIATORS

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Abstract

Tackling at school a sensitive subject like disability requires both teachers' willingness and awareness about the importance of dealing with this subject in the classroom and the educational and didactic concerns. The Italian school, characterized by a long tradition of welcoming children with disabilities, needs the structuring, into the curriculum, of specific proactive interventions, which, using didactic mediators, provide children with a deeper understanding of disability. The design of such educational interventions requires a great commitment to teachers because it recalls several factors (categories) including those related to the identification of appropriate teaching strategies, the choice of possible mediators but above all to questioning the availability, intentionality, opportunity of teachers to propose children a theme considered 'sensitive'.
With the aim of knowing what are the considerations of the teachers on this topic, it was designed a sequential exploratory research, composed by a qualitative and quantitative phases.

Keywords: Disability, inclusion, school, exploratory design, sensitive subject.

1. Introduction

What are the reasons for talking about disability in the school? Why is it necessary to do it in the syllabus? What could happen if it was not done? In our opinion it is essential to treat the issue of disability in the classroom for pedagogical reasons, which concern the construction and cohesion of classmates able to knowingly accept all the differences, included the most 'special' regarding disability (Canevaro et al., 1997; Ianes, 2006), and to accept them in an adequate and authentic way (Sedran, 2003). Other reasons are related to the adoption of a caring attitude towards human beings (Mortari, 2015) and to the development of citizenship skills in students, which also implies the growth of co-responsibility (MIUR, 2012).

It is essential treating this topic for sociological and psychological reasons too: concealing the impairment, or not recognizing it, represents a serious damage to the identity growth of the individual, and to the awareness of the community, which is not helped in perceiving and treating disability naturally (Stiker, 2013). Finally, there are educational policy reasons in supporting and revitalizing the Italian school inclusive choice which it is now in the need of new energies to face obstacles to its realization (Canevaro, 2007).

Tackling about disability at school requires, first of all, the teachers' awareness both of the importance of dealing with this subject in the classes and the implications related to the identification of appropriate teaching strategies and mediators to support the inclusive process. Its concrete realization, in fact, is closely connected to the opinions that teachers themselves have:

a.   towards disability (Jordan, Schwartz, McGhie-Richmond, 2009);
b.   towards students with disabilities (Avramidis, Norwich, 2002; Forlin, 2010a);
c.   towards treating this topic in the syllabus (Rieser, 2006).

This implies that the planning of educational interventions can not take place without an exploratory inquiry on the teachers' considerations on this topic. In Italy the researches in this field are not yet numerous (Sze, 2009) and have been carried out, almost exclusively, using quantitative techniques based on scales (Fiorucci, 2014). These were elaborated by foreign researches within an inclusive model different from the one of the Italian school, mainly oriented to assess the acceptance in class of a student with disabilities and not to investigate attitudes and opinions of inclusive processes already underway for some time (Fiorucci, 2014). For this reason, in the present research it was considered appropriate to

proceed with an explorative design that would allow us to grasp and then categorize the three aspects above.

Teachers can use different strategies and teaching mediators to design educational interventions aimed at dealing with the issue of disability (Garcia et al., 2009). One of the these, traditionally implemented by the schools, is represented by the 'disability awareness programs' aimed at increasing awareness, understanding and acceptance (Prater, 2006) of people with disabilities using books, films, contact with people with disabilities and disability simulations. This kind of experiences have already been carried out in Italy (Canevaro and Ianes, 2001; Capurso, 2005). They have been promoted by several institutions, carried out outside the normal school discipline program and managed by external experts: in that way they are distinguished as extracurricular or without connections of any kind with the curriculum (Garcia et al., 2009). This poor, or even absent, relationship with the syllabus represents a crucial point. As Rieser (1990) argues, the reference to issues related to disability within the subjects traditionally taught at school (i.e. Italian language, mathematics, ...) assumes, respect to interdisciplinary or extra-curricular projects, a more significant impact in promoting positive attitudes towards people with disability as it gives the topic its official status and visibility. The way might then be that of reforming the school syllabus (Quick et al., 1990; Rieser, 2006), inserting the topic of disability within the disciplines or at least those that are present in all phases of the scholastic path.

2. Design

The proposal presented in this paper is part of a wider research project (see Figure 1) aimed at identifying guidelines allowing teachers to design and to carry out their own educational interventions about disability into the syllabus.

Figure 1. The research project.
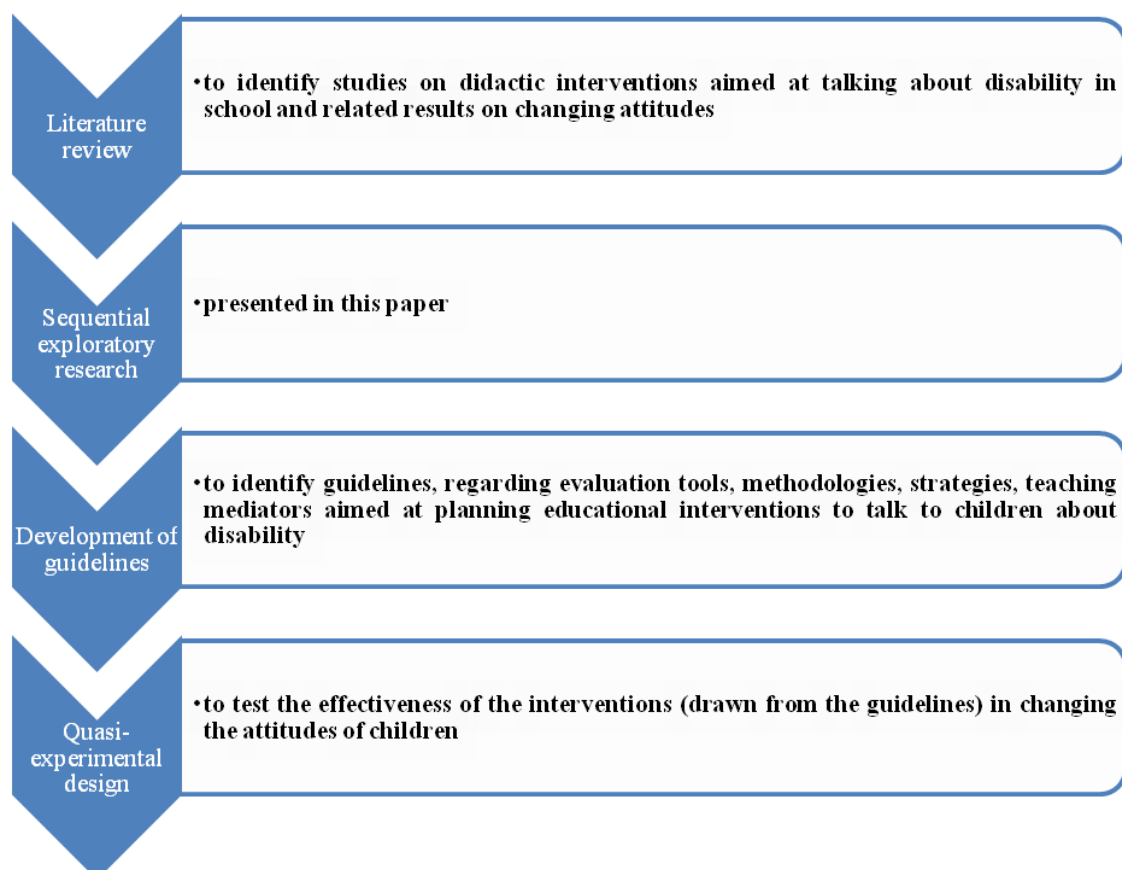
The phase research exposed in this contribution is based on mixed methods according to a sequential exploratory design (Creswell & Clark, 2007) in which a qualitative phase (focus group) follows a quantitative phase (administering a questionnaire). The exploratory design has two variants: the model for the development of tools and the model for the development of taxonomies. In this research, we chose to use the first variant that places the emphasis more on quantitative aspects, since the focuses that take place in the first phase are instrumental to the next survey (Cardano & Ortalda, 2017).

3. Objectives

The research questions are:

1.   What are teachers' considerations regarding the concept of disability?
2.   What are teachers' considerations regarding students with disabilities?
3.   What are teachers' considerations on a educational-didactic level about talking the topic of disability?
4.   What, according to the teachers, are the appropriate teaching approaches, strategies and mediators to talk about disability?

4. Methods

Sequential exploratory research.
a)   Qualitative phase
Objective. To collect qualitative data about teachers' considerations regarding:
- the concept of disability;
- the students with disabilities;
- their availability to talk about disability in classrooms;
- the educational-didactical concerns about treating the topic of disability;
- the educational strategies, the teaching mediators, the critical elements or potentials related to dealing with this 'sensitive' issue.

Participants. 10 kindergarten teachers and 10 primary school teachers. The selection criteria will be the following: to be a teacher in service at a primary school for at least 5 years and to have experience with disability (the word 'experiences' refers to the presence in the classroom of a child with disabilities and / or be a support teacher with or without a title and / or have had specific training on disability). In the identified teacher sample (the identification will take place with the collaboration of the Superintendence for Studies of the Aosta Valley Region), teachers for the focus groups will be drawn. Data collection techniques. Two focus groups will be established, one for primary school and one for kindergarten, with one moderator and one observer for both. Full video recording of the discussions between the participants will be carried out.

Data construction. The complete transcription of the interviews according to the A.T.B. codification will allow researcher group to obtain a corpus that will be subjected to quantitative-qualitative analysis. For the quantitative analysis of the corpus the T-LAB software will be used with the objectives of identifying the vocabulary of frequency and performing the analysis of co-occurrences (word associations, comparisons between pairs of keywords, co-word analysis and concept maps, analysis of sequences and concordances). On the qualitative level, a content analysis will be carried out based on the careful reading of the texts transcribed according to an inductive approach, aimed at constructing general interpretive concepts and categories within which to catalog, up to saturation, the units of analysis constituting the corpus.

b) Quantitative phase
Objective. Through the construction of a questionnaire based on the data obtained from the previous phase, in relation to the above categories, investigate the teachers' considerations regarding:
- the concept of disability;
- the students with disabilities;
- their availability to talk about disability in classrooms;
- the educational-didactical concerns about treating the topic of disability;
- the educational strategies, the teaching mediators, the critical elements or potentials related to dealing with this 'sensitive' issue.

Participants. Teachers serving in primary school and kindergarten during the 2017/2018 school year in Valle d'Aosta.

Data collection techniques. Questionnaire with questions with structured answers (Likert scale) constructed starting from the data obtained from the previous phase in relation to the above categories.

Data construction. The questionnaires will be sent through the institutional email service to all teachers in service during the 2017/2018 school year in Valle d'Aosta (about 200). The data collected with the questionnaire will be subjected to quantitative analysis and the results will be reported and discussed with the working group of the teachers who participated in the focus groups. A regional public meeting will also be organized, in order to share the results with all the Aosta Valley teachers.

5. Discussion and conclusions

The research will allow to trace some trend lines, in the Valle d'Aosta area, about the teachers' considerations on:
- the concept of disability;
- the students with disabilities;
- their availability to talk about disability in classrooms;
- the educational-didactical concerns about treating the topic of disability;
- the educational strategies, the teaching mediators, the critical elements or potentials related to dealing with this 'sensitive' issue.

Although this project is an exploratory research, that is a collection of information through focus groups and structured questionnaire, it is important to underline that it represents the beginning of a reflective process by teachers, induced by the tools used, about the possibility and importance of talking about disability at school.

The presented research project will therefore allow to outline a picture of teachers' ideas about the possibility and availability of talking about disability at school and to consider the issue as an integral part of the curriculum. The project will continue in the following school year, 2018-2019, with the design of specific didactic courses dedicated to dealing with the issue of disability in the classroom and will see the direct involvement of teachers and future teachers (ie students of the single-cycle master's degree program of Primary Education Sciences of the University of Valle d'Aosta). These learning paths will have the objective of developing awareness, knowledge and acceptance with respect to disability, in order to make the classes places of true and authentic inclusion, in which everyone is respected on the basis of their own characteristics and can participate. Moreover, the project will also represent a first phase of a longer path that will see, in its subsequent action, the real experimentation in the classes of such planned didactic paths. The design and experimentation process will be monitored with precise and precise tools and the final product will be a good practice to be shared on the territory, in order to enrich the repertoire of didactic itineraries favoring inclusion.

References

Avramidis E., Norwich B. (2002). Teachers' attitudes towards integration/inclusion: A review of literature.*European Journal of Special Needs Education*, *17*(2), 129–147.

Canevaro, A., Balzaretti, C., & Rigon G. (1997). *Pedagogia speciale dell'integrazione. Handicap: conoscere e accompagnare*. Firenze: La Nuova Italia.

Canevaro A. & D. Ianes (2001), *Buone prassi di integrazione scolastica*, Trento, Erickson.

Canevaro, A. (2007). *L'integrazione scolastica degli alunni con disabilità. Trent'anni di inclusione nella scuola italiana*. Trento: Erickson.

Capurso M. (2005). Insieme per crescere: un percorso didattico per conoscere e accettare le disabilità. *Difficoltà di apprendimento*, *11*(1), pp. 93-117.

Cardano, M., Ortalda F. (2017). *Metodologia della ricerca psicosociale*. Torino:UTET

Fiorucci A. (2014). Gli atteggiamenti degli insegnanti verso l'inclusione e la disabilità: uno sguardo internazionale. *Italian Journal of Special Education for Inclusion*, *2* (1), pp. 53-66.

Forlin C. (2010a). Re-framing teacher education for inclusion. *Teacher education for inclusion: Changing paradigms and innovative approaches* (pp. 3-10). Abingdon: Routledge.

Garcia M.A., Diaz A.L &. Rodriguez M.A (2009). A review and analysis of programmes promoting changes in attitudes towards people with disabilities. *Annuary of Clinical and Health Psychology*, 5, pp. 81-94.

Ianes, D. (2006). *La speciale normalità*. Trento: Erickson.

Jordan A., Schwartz E., McGhie-Richmond D. (2009). Preparing teachers for inclusive classrooms. *Teaching and Teacher Education, 25*(4), 535–542.

MIUR (2012). *Indicazioni Nazionali per il Curricolo della Scuola dell'Infanzia e del Primo Ciclo di Istruzione.*

Mortari, L. (2015). *La filosofia della cura*. Milano: Raffaello Cortina.

Prater M.A, Dyches T.T. & Johnstun M. (2006). Teaching Students about Learning Disabilities through Children's Literature. *Intervention in School and Clinic, 42 (1),* 14-24.

Quicke J, Beasley K.& Morrison C. (1990). *Challenging prejudice through education: The story of a mental handicap awareness curriculum project*, London: Falmer Press.

Rieser R (2006), *Making it Happen: Implementing the Duty to promote Disability Equality in Secondary Schools and Local Authorities. Disability Equality in Education*, Course Book.

Rieser R (1990), Disability and the National Curriculum. In R. Rieser & M. Mason, *Disability Equality in the Classroom: A Human Rights Issue.* London: Education Authority.

Sedran, D. (2003). *L'autentico nella relazione educativa*. Perugia: Morlacchi.

Stiker, H.J. (2013). *Corps infirmes et sociétés: essais d'anthropologie historique*. Paris: Dunod.

Sze S. (2009). A literature review: Pre-service teachers' attitudes toward students with disabilities. *Education, 130*(1), 53-56.

Vanier, J., & Kristeva, J. (2011). *Il loro sguardo buca le nostre ombre*. Roma: Donzelli.

LONG-TERM EFFECTS OF CAI FOR PRE-KINDERGARTEN, LOW SOCIOECONOMIC STATUS STUDENTS

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Abstract

The study aims to investigate the long-term effects of technology on early literacy skills. Incorporation of technology into the classroom has been commonly explored, however there has been little evidence that these effects are long-lasting. Early childhood education can prepare young students for successful school experiences despite challenges arising from personal circumstances in the home: Therefore, stronger, more valid studies investigating high-quality early childhood education for minority students and children from lower economic backgrounds are necessary to safeguard academic success for all students. In the current study, a computer-assisted instruction (CAI) program was provided five days per week for fifteen minutes per day to pre-kindergarten students from low socioeconomic status homes in Florida during the 2014-2015 school year. None of the students used CAI while in kindergarten. At the end of the 2015-2016 school year (end of kindergarten), these students were given a literacy assessment, and their scores were compared to the scores of a control group of kindergarten students who did not have access to CAI. The sample was analyzed by demographic factors, including English language learner (ELL) status, ethnicity, and socioeconomic status (SES). Students who used the CAI program in pre-kindergarten had higher literacy scores a year later (at the end of their kindergarten year) than control group students. The results of this study demonstrate that after using CAI at a young age, minority students and those from lower SES families were positively impacted in their academic performance, improving their learning beyond the immediate use of the software. The large effect sizes indicate that students, particularly ELL and Hispanic students, saw substantial, long-term meaningful improvement as a result of using CAI. These results indicate that CAI technology can have a lasting positive effect on early literacy skills.

Keywords: Computer-assisted instruction (CAI), literacy, early childhood.

1. Introduction

The U.S. Department of Education reports that in the 2015 National Assessment of Educational Progress (NAEP), almost two-thirds of students in fourth grade and eighth grade did not perform at the Proficient achievement level in reading (National Center for Education Statistics [NCES], 2015). The percentage of the student body at or above this benchmark was noticeably lower for minority students. In fourth grade, only 18% of African American students and 21% of Hispanic students achieved a reading status of Proficient, while 36% of the total student body scored as Proficient. This reflects the achievement gap along demographic lines, and this difference in literacy did not change significantly by eighth grade (NCES, 2015). Lower academic performance in minority students is especially concerning as most minority populations are growing (Musu-Gillette et al., 2016). Since minority students account for a rising proportion of the population of school-age children, ensuring that education is effective for all students is a necessary goal.

In addition to a racial achievement gap, students of disadvantaged families also tend to perform worse academically than their more affluent peers (Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010). Project Head Start is a governmental program that started in 1965 with the goal of supporting young disadvantaged children with the resources they need to begin school (Vinovskis, 2005). The program includes health services as well as educational resources to better prepare students for kindergarten. Studies have shown that teaching early literacy skills to young students through Head Start provides long-term benefits for those students, including a greater likelihood of graduating high school and attending college (Lee, Zhai, Brooks-Gunn, Han, & Waldfogel, 2014).

One possible way that existing intervention programs such as Head Start could be improved is through the use of computer-assisted instruction (CAI). CAI is an educational method of presenting students with different forms of interactive and instructional media. Unlike traditional large group instruction, CAI allows individual students to experience content that is consistently appropriate for their pace of learning and provides meaningful feedback (Jethro, Grace, & Thomas, 2012). Using an individualized curriculum increases students' flexibility, interactivity, and engagement, and it has been shown to improve young students' literacy skills (Stetter & Hughes, 2010). CAI has been shown to benefit students at an early age: A study across 18 preschools gave students access to touchscreen desktops with interactive software which taught reading skills, and students who used the software scored higher in a standardized literacy test than those who did not (McManis & McManis, 2016).

Studies have also shown that individualized education through CAI has been effective in teaching students across different demographics. One study provided first and second grade low socioeconomic status (SES) students with supplemental CAI and compared their assessment scores to those of a control group who only received traditional reading instruction (Schechter, Macaruso, Kazakoff & Brooke, 2015). Students who used the CAI software made larger gains in literacy during the school year than their control group counterparts. Another study looked at the longitudinal impact of CAI, comparing kindergarten literacy test scores of disadvantaged students who had used CAI for two school years to students who only used the software for one year (Thai & Ponciano, 2016). Students who used CAI software during pre-kindergarten and kindergarten scored significantly higher on literacy assessments at the end of kindergarten than students who used the software during kindergarten alone. The positive effect of CAI during the two years was especially prominent for students with lower initial scores.

The growing body of research behind CAI demonstrates that it can help foster immediate learning gains as a supplement to classroom education; however, the effects of CAI academic improvement have also been shown to be limited: One study of 1,246 fifth grade students found no statistical significance in scores between students who used a supplemental CAI and a similar control group (James-Burdumy et al., 2009). Additionally, a meta-analysis on the effectiveness of education technology found a range of outcomes for CAI interventions, and most positive effects of CAI were small (Cheung & Slavin, 2011). Further research is necessary to explore the degree to which CAI can provide lasting effects on learning (Bebell, O'Dwyer, Russell, Hoffmann, 2010).

The current study investigates long-term effects of using CAI in an existing Head Start program: A kindergarten literacy assessment was given to Head Start students one year after they used the CAI software, as well as a control group of students who did not use the software. It is predicted that students who used the software in pre-kindergarten will score higher at the end of kindergarten compared to students who had not used the software.

2. Methods

2.1. Participants

This study consisted of kindergarten students ($N = 9,701$) enrolled in a public school district in Florida during the 2015-2016 school year. The experimental group ($n = 266$) consisted of students who used Waterford for more than 1,250 minutes during the previous school year as part of Head Start (pre-kindergarten). The control group ($n = 9,435$) consisted of students who have never used Waterford.

2.2. Materials

2.2.1. Waterford early reading program. The program offers a comprehensive, computer-adaptive pre-reading and reading curriculum for pre-kindergarten through second grade students. The software presents a wide range of multimedia-based activities in an adaptive sequence tailored to each student's initial placement and his or her individual rate of growth throughout the complete reading curriculum.

2.2.2. Kindergarten readiness test (KRT). The KRT is an assessment designed for kindergarten students that measures competency in reading skills. The assessment is administered to each student individually. Students are scored for each subtest and are also given an overall score.

2.2.3. Procedure. Students in the experimental group were expected to use Waterford for fifteen minutes per day, five days per week during pre-kindergarten. Usage was tracked within the program and monitored weekly, and total minutes of Waterford usage for the school year was calculated. The KRT was administered at the end of kindergarten, a year after students in the experimental group had stopped using Waterford.

3. Results

Independent samples *t*-tests were conducted to examine group differences on end of kindergarten year scores for each strand of KRT scores for English language learner (ELL) students, students of minority ethnicities, and students with free lunch status. (Tab. 1).

3.1. Overall KRT scores

Analysis of Overall KRT end of year scores for ELL students revealed a significant difference between groups, $t(1, 151) = -6.75$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.65$).

Analysis of Overall KRT end of year scores for African American students revealed a significant difference between groups, $t(1, 116) = -2.34$, $p < .05$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.24$).

Analysis of Overall KRT end of year scores for Hispanic students revealed a significant difference between groups, $t(1, 165) = -3.52$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.30$).

Analysis of Overall KRT end of year scores for students with free lunch status revealed a significant difference between groups, $t(1, 279) = -4.42$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.29$).

3.2. KRT letter identification (ID) and sounds

Analysis of KRT Letter ID and Sounds end of year scores for ELL students revealed a significant difference between groups, $t(1, 494) = -10.13$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.98$).

Analysis of KRT Letter ID and Sounds end of year scores for African American students revealed a significant difference between groups, $t(1, 142) = -2.76$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.28$).

Analysis of KRT Letter ID and Sounds end of year scores for Hispanic students revealed a significant difference between groups, $t(1, 298) = -7.13$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.61$).

Analysis of KRT Letter ID and Sounds end of year scores for students with free lunch status revealed a significant difference between groups, $t(1, 392) = -6.60$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.43$).

3.3. KRT concepts of print

Analysis of KRT Concepts of Print end of year scores for ELL students revealed a significant difference between groups, $t(1, 170) = -6.55$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.63$).

Analysis of KRT Concepts of Print end of year scores for African American students did not reveal a significant difference between groups, $t(1, 2604) = -0.81$, $p = .421$; however, experimental students had higher end of year scores than control students.

Analysis of KRT Concepts of Print end of year scores for Hispanic students revealed a significant difference between groups, $t(1, 170) = -3.45$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.29$).

Analysis of KRT Concepts of Print end of year scores for students with free lunch status revealed a significant difference between groups, $t(1, 266) = -2.16$, $p < .05$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.14$).

3.4. KRT phonemic awareness

Analysis of KRT Phonemic Awareness end of year scores for ELL students revealed a significant difference between groups, $t(1, 143) = -5.95$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.58$).

Analysis of KRT Phonemic Awareness end of year scores for African American students revealed a significant difference between groups, $t(1, 117) = -2.15$, $p < .05$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.22$).

Analysis of KRT Phonemic Awareness end of year scores for Hispanic students revealed a significant difference between groups, $t(1, 159) = -3.18$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.27$).

Analysis of KRT Phonemic Awareness end of year scores for students with free lunch status revealed a significant difference between groups, $t(1, 271) = -3.38$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.22$).

Table 1. End of Kindergarten Scores by Strand and Demographics.

	Experimental			Control				
	M	*SD*	*N*	*M*	*SD*	*N*	*t*	*p*
Overall								
ELL	151.43	15.98	111	140.34	32.27	2627	-6.75	.000**
African American	151.67	18.16	100	147.25	26.37	2528	-2.34	.021*
Hispanic	152.06	16.28	141	147.04	27.52	4693	-3.52	.001**
Free Lunch	151.44	17.67	241	146.21	27.09	7240	-4.42	.000**
Letter ID and Sounds								
ELL	82.50	2.30	111	79.23	12.14	2613	-10.13	.000**
African American	82.14	3.24	100	81.16	7.27	2509	-2.76	.006**
Hispanic	82.45	2.38	141	80.72	9.35	4668	-7.13	.000**
Free Lunch	82.25	2.99	241	80.81	8.62	7192	-6.60	.000**
Concepts of Print								
ELL	17.69	1.32	111	16.78	3.17	2612	-6.55	.000**
African American	17.53	2.04	100	17.35	2.18	2506	-0.81	.421
Hispanic	17.69	1.31	141	17.29	2.41	4667	-3.45	.001**
Free Lunch	17.58	1.79	241	17.32	2.25	7185	-2.16	.032*
Phonemic Awareness								
ELL	24.14	3.45	111	22.06	6.32	2623	-5.95	.000**
African American	24.10	3.17	100	23.39	4.72	2521	-2.15	.033*
Hispanic	24.15	3.39	141	23.21	5.04	4687	-3.18	.002**
Free Lunch	24.04	3.54	241	23.25	4.88	7224	-3.38	.001**

*$p < .05$, **$p < .01$

4. Conclusions

An academic achievement gap occurs as early as kindergarten between students of different ethnicities (Burchinal et al., 2011) and between high- and low-SES families (Crosnoe et al., 2010). Providing support to disadvantaged students at an early age will help them excel academically. Research has shown that CAI has the potential to assist learning in young students (McManis & McManis, 2016), and that it can foster long term learning gains (Thai & Ponciano, 2016). However, not all CAI interventions have been wholly positive (Bebell, O'Dwyer, Russell, Hoffmann, 2010).

The current study supports the hypothesis that the use of CAI at a young age can have lasting effects on learning. Students in the experimental group exhibited significantly higher literacy assessment scores than the control group by the end of kindergarten, a full year after using the software. The experimental group outperformed the control group on the overall assessment score and on each of the substrands tested, and the difference in scores was statistically significant across almost all demographics analyzed. The large effect sizes indicate that students, particularly ELL and Hispanic students, saw substantial, meaningful improvement in the long-term as a result of using CAI. These findings expand on the results of previous studies that demonstrate the benefits of CAI (McManis & McManis, 2016; Neuman, Newman, & Dwyer, 2015), and show that the impact of CAI is retained after the software is no longer being used.

As a growing portion of the school-age population in the U.S. are ELL and Hispanic students (Musu-Gillette et al., 2016), it is more important than ever to close the achievement gap for these students. The results of this study demonstrate that after using CAI at a young age, minority students and those from lower SES families were positively impacted in their academic performance, improving their learning beyond the immediate use of the software. The large effect sizes found for these students are especially impressive, since most research on CAI in the past decade has had mixed results, and most positive effects that were found have been small (Cheung & Slavin, 2011). These findings are a strong contribution to the field of early childhood education, as it intersects with the use of technology in the classroom.

While this study found a positive impact for CAI, its ability to speak to the effect of early CAI intervention on a students' complete academic trajectory was limited since there was only one year between the students using the software and the time of the assessment. Additional follow-up with students throughout their academic career would help demonstrate the lasting effects of CAI even more meaningfully. Further research is also needed to study the positive effects of CAI on students of different

backgrounds. Although the current research demonstrated the effectiveness for students of different ethnicities and from low SES families, expanding the sample of students across multiple school districts would help generalize the results.

References

Bebell, D., O'Dwyer, L. M., Russell, M., & Hoffmann, T. (2010). Concerns, considerations, and new ideas for data collection and research in educational technology studies. *Journal of Research on Technology in Education, 43*(1), 29-52.

Burchinal, M., Mccartney, K., Steinberg, L., Crosnoe, R., Friedman, S. L., Mcloyd, V., & Pianta, R. (2011). Examining the black-white achievement gap among low-income children using the NICHD study of early child care and youth development. *Child Development, 82*(5), 1404-1420.

Cheung, A., & Slavin, R. E. (2011). The effectiveness of education technology for enhancing reading achievement: A meta-analysis. from The Center for Research and Reform in Education, Johns Hopkins University: http://www.bestevidence.org/reading/tech/tech.html

Crosnoe, R., Leventhal, T., Wirth, R. J., Pierce, K. M., & Pianta, R. C. (2010). Family socioeconomic status and consistent environmental stimulation in early childhood. *Child Development, 81*(3), 972-987.

James-Burdumy, S., Mansfield, W., Deke, J., Carey, N., Lugo-Gil, J., Hershey, A., et al. (2009). *Effectiveness of Selected Supplemental Reading Comprehension Interventions: Impacts on a First Cohort of Fifth-Grade Students*. Washington, DC: Institute of Education Sciences.

Jethro, O. O., Grace, A. M., & Thomas, A. K. (2012). E-learning and its effects on teaching and learning in a global age. *International Journal of Academic Research in Business and Social Sciences, 2*(1), 203-210.

Lee, R., Zhai, F., Brooks-Gunn, J., Han. W.J., & Waldfogel, J. (2014). Head start participation and school readiness: Evidence from the early childhood longitudinal study-birth cohort. *Developmental Psychology, 50*(1), 202-215.

McManis, M. H., & McManis, L. D. (2016). Using a touch-based, computer-assisted learning system to pro-mote literacy and math skills for low-income preschoolers. *Journal of Information Technology Education: Research, 15*, 409-429.

Musu-Gillette, L., Robinson, J., McFarland, J., KewalRamani, A., Zhang, A., & Wilkinson-Flicker, S. (2016). Status and trends in the education of racial and ethnic groups 2016. NCES 2016-007. National Center for Education Statistics.

National Center for Education Statistics (2015). NAEP overview. Retrieved November 13, 2017 from https://www.nationsreportcard.gov/reading_math_2015/

Neuman, S. B., Newman, E., & Dwyer, J. (2011). Educational effects of an embedded multimedia vocabulary intervention for economically disadvantaged pre-K children: A randomized trial. *Reading Research Quarterly*, *46*, 249–272.

Schechter, R., Macaruso, P., Kazakoff, E. R., Brooke, E. (2015). Exploration of a blended learning approach to reading instruction for low SES students in early elementary grades. *Computers in the Schools 32*(3-4), 183-200.

Stetter, M. E., & Hughes, M. T. (2010). Computer-assisted instruction to enhance the reading comprehension of struggling readers: A review of the literature. *Journal of Special Education Technology, 25(*4), 5-20.

Tahi, K. P., Ponciano, L. (2016). Improving outcomes for at-risk prekindergarten and kindergarten students with a digital learning resource. *Journal of Applied Research on Children 7*(2), 1-29.

Vinovskis, M. (2005) *The birth of Head Start*. Chicago, IL: University of Chicago Press.

STRATEGIES AND RESOURCES FOR ALL? ATTENTION TO DIVERSITY IN THE COMPULSORY TEACHING OF SOUTHERN SPAIN

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Abstract

Strategies and resources to attend the diversity of students propose learning environments as a response to processes of school exclusion-segregation. In this sense, various studies indicate the significance of these strategies and resources to address the diversity of students in the construction of a school for all.

The study participants are special education teachers in public centers of Early Childhood Education and Primary Education in the south of Spain. The objective of this study is to know and analyze the strategies and didactic resources they use. For this, a qualitative study was proposed using instruments such as interviews, classroom observations and daily research.

The results show the conceptions and practices in the classroom, in relation to the strategies and resources implemented to attend the diversity from the curriculum. This study presents the range of possibilities regarding their uses and functionality in the classroom, as well as the degree of inclusion that they enhance.

The conclusions emphasize that the response from the curriculum should be made from the logic of diversity, not from the logic of difference. But the reality of everyday practices indicates a divergent direction to these perceptions, since the daily practice in the classroom is overburdened by teacher bureaucratization, the pressure of external evaluation tests, international rankings and the reproduction of conventional measures that do not encourage a comprehensive curriculum able of being acquired by all school children.

Keywords: Attention to diversity, teaching strategies, resource.

1. Introduction

At present, the perception of diversity remains a problem that complicates teaching-learning processes and not as a characteristic integrated in the daily experience of people (Arnáiz, 2003, Echeita, 2006, López, 2008, Martínez, De Haro and Escarbajal, 2010, Delgado and García, 2017). The different studies carried out during the last two decades about strategies and resources to address diversity (Álvarez and Soler, 1996) indicate that they facilitate educational processes to serve all students but are focused on a technical rationality (Booth and Ainscow, 2000). It is known which are the most used and effective for the development of inclusive schools (Ainscow, 2008, Fernández, 2009), but not how they are carried out in classroom practice (Botías, 2012, García and Delgado, 2017).

On the one hand, strategies must address the teaching and learning process from an inclusive and non-exclusive perspective (Muntaner 2000). In this way, they should be selected and organized to produce meaningful lessons that enhance the processes (Moyano and Giordano, 2011) enhancing and extending their employment possibilities (Beltrán, 2003). On the other hand, the educational resources provide the students with information, techniques and motivation that helps them in their learning processes, however, their effectiveness will depend on the way in which the student is using them within the framework of the educational strategy that they are using. The didactic resources are important for the daily development of the classroom, directly affecting the relationships established in it (Mora, 1995), in relation to the attention of diversity.

In short, the strategies and resources that are available in the classroom, move away from the practice that identifies diversity from the inclusive approach. In this sense, the interest of this contribution is focused on knowing and analyzing classroom conceptions and school practices regarding the resources and strategies used by specialists in therapeutic pedagogy and if these promote a school for all.

2. Research design

This is a research of a qualitative nature, with an exploratory and interpretative nature, that analyzes the didactic strategies implemented by the Therapeutic Pedagogues (PT), in ordinary classrooms as well as outside them.

The research team kept an interview with the PT teacher and made a classroom observation. Subsequently, based on the information observed, a methodological triangulation was carried out to give greater consistency and credibility to the results.

This study is carried out in Public Primary and Early Childhood Education Centers (CEIP) in Seville (Spain). Through non-probabilistic sampling, the participants were the 49 Special Education teachers, as experts in Therapeutic Pedagogy. The observations were made in their classrooms, recording the process through grids and field diaries. The classrooms and the students were diverse. The selection criteria, in addition to those described were: accessibility and willingness to participate, public school, PT specialist.

Different integrated qualitative instruments were used to facilitate the triangulation process.

The semi-structured individual interviews were carried out in a flexible manner with questions that responded to the research objectives. With the support of field notes and a tape recorder, they were transcribed and encoded. Also informal conversations.

For the observations of the classroom, in addition to completing the observation, digital devices and others were used, such as the field diary that allowed the notes to be collected.

The large amount of data was ordered and systematized through a hermeneutic matrix with different previously established dimensions (one of these dimensions is the meaning of the present contribution-didactic strategies-). With the Atlas.ti v.6.2 program. the data was encoded. For the credibility of the analysis, different criteria were used, such as triangulation and stakeholder review.

3. Objectives

The objective of this research is to know the didactic strategies carried out by the specialists of each center in therapeutic pedagogy (Special Education teachers). For this, it is intended that they expose their practice, explore it and analyze it in specific classroom settings.

4. Results and discussion

Different studies refer to didactic strategies and resources as the methodological elements that allow greater attention to diversity and an education for all. However, they differ if they are carried out with a curricular sense in the ordinary classroom or in the support classroom. For this reason, it is a question that is highly debated among specialists in the subject (Moya, 2002).

Coming up next, the most significant information extracted from the conceptions and practices of specialists in therapeutic pedagogy, is analyzed and systematized.

4.1. Resources

The choice of resources will allow more interaction, mutualism, functional learning, involvement of educational agents or socioconstructivist learning, among others. The resources and strategies that address diversity include all those actions that, within the framework of the inclusive school, take into account that all students are likely to have educational needs, specific or not, special or not, and with different levels of achievement. These will allow access to an educational system with equal opportunities, promoting the maximum possible development of their personal abilities and thus, guaranteeing the right to education. But it's not enough.

The amount of resources available to the therapeutic pedagogue to attend to diversity is limited. Therefore, its selection for a functional use and for learning to have a greater projection, is one of the most significant decisions of the teacher. Personal, digital and printed resources are necessary for daily use in the classroom, "I usually use printed material, educational games for both mathematics and literacy, material prepared by teachers, technological resources" (23:26, 86:87, Interview PT 4), "I have many resources given by the center itself or 'Junta de Andalucía' and other resources prepared by me" (12:13, 34:35, Interview PT 27).

The widespread use of files, bits, stories and games, is complemented in many cases with ICT (Fernández and Torres, 2015). Methodologically, in the classroom they are found in the same way as conventional resources: "They work with specific materials depending on the needs. In order to learn mathematical operations they use tablets but they follow reproductive learning patterns "(45:32, 14:15, Classroom Observation 34).

The teacher usually uses resources to facilitate the acquisition of content, mediate learning experiences and support their methodological strategies, "very different materials from different publishers and web pages and complementary activities (cards, booklets, books, etc.)" (15:14, 56:58, Interview PT 12). Below are the most frequent:

1-Books and records. 2-Pictograms. 3-Abacus. 4-Educational and interactive games. 5-Curricular adaptations. 6-Diversity Support Technologies (DST), specific software. 7-Chess in the classroom. 8-Gram-motor skills.

In this way, it seems that the centers have both the personal and material resources necessary to meet the needs of the students. The resources used are focused on materials adapted to their levels. Thus, the same line is followed as the class, but with varied activities. In general, they have enough human and material resources to give an educational response to students who need it. But its use remains the reason for doubts in classroom practice, both in the ordinary classroom and in support.

4.2. Teaching strategies

The use of techniques and strategies that favor direct experience, reflection, peer support and expression should be encouraged. Depending on the methodological strategy we will carry out one type of grouping or another. Regardless of the importance of the heterogeneous grouping for the educational response to diversity, the strategies allow favoring the greater development of the whole of the students in group-classroom environment, respecting the heterogeneity and the adaptation of the teaching to the needs of each student.

Groupings are perceived as an opportunity to give an educational response to diversity. Different types of group-classroom organization are usually recurrent for both specialists and generalist teachers. Among them, we highlight in this study the cooperative work, work by corners, workshops, work projects, differentiation by levels of learning, support within the classroom and tutorials. In addition, individualization techniques such as daily or the learning contract are often used.

Here are some of the techniques and strategies selected by the specialists, which in their opinion are especially favorable and useful for all students:

"We must try to apply a series of strategies such as the following: make possible the diversity of learning styles, develop guidelines that favor interaction, follow mechanisms in which the student himself participates (diary, chips), among others" (9:34, 123: 126, Interview PT 9).

"The strategies are very varied depending on the characteristics of the student and always looking for inclusion in the ordinary classroom" (52:59, 227: 230, Interview PT 48).

"Educational contracts and coexistence with families, monitoring of tutorials, educational reinforcement ..." (39:48, 87:89, Interview PT 38).

In the learning contracts, the tutor and the PT agree with the students the contents, activities and time. They write it and sign with the consensus of all of them, although at certain times they pass outside or inside the ordinary classroom. It is a commitment in the programming of activities.

Cooperative methods (Pujolás, 2008), are characterized by the fact that learning will occur through interaction among students (Johnson, Johnson and Holubec, 1999). They are usually part of the dynamics of some specialists. Those used frequently in classrooms by specialists are research groups and peer tutoring -tutories among students in their different modalities- (Durán, 2004). The content that is worked on peer tutoring, sometimes, it is not the one that is being given by the tutor. However, there must be continuity between both activities.

Other less implemented methods are puzzles (Jigsaw) and individualization groups.

Below, different results are indicated regarding the use of the strategies:

"Collaboration among equals. Other times I have carried out corners in Primary" (20:32, 115: 116, Interview PT 19).

"I usually do with them the strategy of tutoring" (11:34, 45:46, Interview PT 10).

"Cooperative learning, companion tutor" (9:44, 75:76, Interview PT 8).

"Sometimes we work through Interactive Groups" (43:49, 185: 186, Interview PT 42).

"Cooperative work for me is very important" (39:42, 67:68, Interview PT 38).

The working corners are delimited and concrete spaces, located in the classrooms or their immediate surroundings (corridors), where the students work simultaneously and around a single project or programming unit. These spaces are designed through the approach of materials and activities that arouse interest and motivation.

"Normally I do multidimensional corners of work and approach" (28:34, 126: 128, Interview PT 27).

"As a strategy, I usually use diary and chips" (33:21, 45:46, Interview PT 25).

"I use files to reinforce their need, such as attention, mathematics, sequence ..." (46:34, 141: 143, Interview PT 45).

In the diary the PT teacher usually establishes a series of activities to be carried out and the student performs them in the order that he wants. There are different modalities but it is usually the most repeated.

The excessive use of chips at school follows the same logic as the textbook. In many cases, it is carried out for convenience but without a functional sense of learning.

Although the strategies that facilitate attention to diversity have a broad and consolidated path, they must converge with the causes that have promoted the emergence of inclusion: on the one hand, the recognition of education as a right; and, on the other, the consideration of diversity as an essential educational value for the transformation of the centers.

5. Conclusions

The repeated discourse of the inclusive approach is questioned in the classroom practice: uniform, closed and inflexible curricula, majority materials with a dogmatic basis, homogeneous groupings, the dysfunctionality of individualized tutoring, the difficulty of supporting with resources and strategies certain compensatory actions or the application of conventional methodologies.

Inclusion remains a challenge for the democratic school (Calderón and Echeita, 2016, Murillo and Martínez-Garrido, 2017). The conventional model continues to project itself under its logic. Almost 80% of the participants answered that they used didactic strategies that do not allow the maximum development of a school for all. The teacher continues to impart contents through orientations and strategies that the PT teacher assures that they attend to the diversity of all the students.

The resources that are available are numerous: from the center, from other institutions and from our own production. Most follow the same conventional logic as the school manual. In addition, ICTs are incorporated and their use is frequent.

Those specialists in PT, indicate that cooperative strategies in the ordinary classroom allow a greater performance in group than other personal strategies outside the ordinary classroom.

When diversity of resources and didactic strategies are considered, we must do so with a meaning. The resources and strategies should not promote simple exercises, but tasks that require a content, a flexible organization, different materials, should not be only algorithms in which all activities are done in the same way; and should introduce a process and a formative evaluation. That is, that knowledge is raised and organized in a series of meaningful sequences. This proposal must transcend the traditionally adopted methodological perspective and overcome the didactic obstacle it implies.

With all this, it is proposed to continue in the line of school for all, open to diversity and governed by a global project and with the participation of all the members involved (community, teachers, students). And, in this way, continue within the framework of a comprehensive school, where all students are offered an appropriate education without exclusion.

References

Ainscow.M. (2008). *Desarrollo de escuelas inclusivas.* Madrid: Narcea.

Álvarez, L. y Soler, E. (1996): *La diversidad en la práctica educativa. Modelos de orientación y tutoría.* Madrid: C.C.S.

Arnáiz Sánchez, P. (2003). *Educación inclusiva: una escuela para todos.* Málaga. Aljibe.

Beltrán, J.A. (2003). Estrategias de aprendizaje. *Revista de Educación*, 4 (332), 55-73.

Booth, T., y Ainscow, M. (Ed.) (2000).*Index for Inclusion*. Bristol: Centre for Studies on Inclusive Education.

Botías, F. (2012). Necesidadeseducativasespeciales: planteamientosprácticos. Madrid: Wolters Kluwer Educación.

Calderón, I. y Echeita, G. (2016). Desafíos ineludibles para la construcción de escuelas inclusivas. *Dossier GRAÓ*, 1, 35-41.

Delgado García, M. y García Prieto, F.J. (2017). La atencion a la diversidad en el sur de España: concepciones y práctica del pedagogo terapeuta. *Educação (UFSM),* 42(1), 15-32. doi:http://dx.doi.org/10.5902/1984644425247

Durán, D. (2004). *Tutoría entre iguales: de la teoría a la práctica, un método de aprendizaje cooperativo para la diversidad en secundaria.* Barcelona: Graó.

Echeita, G. (2006). *Educación para la inclusión o educación sin exclusiones*. Madrid: Narcea.

Fernández Batanero, J.M. (2009). *Un currículum para la diversidad.* Madrid: Síntesis.

Fernández, J.M. y Torres, J.A. (2015). Actitudes docentes y buenas prácticas con TIC del profesorado de Educación Permanente de Adultos en Andalucía. *Revista Complutense de Educación*, 26, 33-49.

Gairín, J. (1998). *Estrategias educativas en la atención a la diversidad*. Revista Educar nº 22-23. Bellaterra: Universidad Autonoma de Barcelona.

García Prieto, F.J. y Delgado García, M. (2017). Estrategias de enseñanza como respuesta a la diversidad: Concepciones y prácticas del pedagogo terapéutico. *Revista Nacional e Internacional de Educación Inclusiva*. 10(1) pp. 103-116.

Jarque, J.M. (2016). ¿De qué hablamos, de inclusión o de escuela inclusiva?. *Dossier GRAÓ*, 1, 42-46.

Johnson, D.; Johnson, R. y Holubec, J. (1999).*El aprendizaje cooperativo en el aula.* Barcelona: Piados.

López Melero, M. (2008) La didáctica de la escuela inclusiva (p.333-361). En Herrán Gascón, A. Paredes Labra, J. et al. (2008). *Didáctica general: la práctica de la enseñanza en Educación Infantil, Primaria y Secundaria.* Madrid: McGraw- Hill.

Martínez, R., De Haro, R y Escarbajal, A. (2010). Una aproximación a la educación inclusiva en España. *Revista Nacional e Internacional de Educación Inclusiva*. 3(1) pp. 149-164.

Mora Sánchez, J.A. (1995). Los recursos didácticos en el aprendizaje de la Geometría. *Revista de didáctica de las matemáticas,* 3, 101-115.

Moya, A. (2002). El profesorado de apoyo. ¿Dónde? ¿cuándo? ¿cómo?...Realizasutrabajo. Málaga: Aljibe.

Moyano, M. A. y Giordano, M. F. (2011). Estrategias de enseñanza en la formación docente. *Didasc@lia. Didáctica y Educación.* 2. 1-10.

Muntaner, J. (2000). La igualdad de oportunidades en la escuela de la diversidad. En *Profesorado, revista de currículum y formación del profesorado*, nº 4 (1), pp. 1-19.

Murillo, F. J. y Martínez-Garrido, C. (2017). Estimación de la magnitud de la segregación escolar en América Latina. *magis, Revista Internacional de Investigación en Educación,* 9 (19), 11-30. doi: 10.11144/Javeriana.m9-19.emse

Pujolás, P. (2008). *9 ideas clave: el aprendizaje cooperativo*. Barcelona: Graó.

"DEAF LEARNING": USING A VISUAL METHOD TO TEACH WRITTEN LANGUAGE TO THE DEAF

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Abstract

The majority of deaf people prefer to use the visual channel for communication, choosing a national sign language instead of a spoken language. In many countries, Deaf education is still not bilingual, therefore deaf people frequently have problems with learning and using the written language of their country. The Erasmus+ project "Deaf Learning" addresses the need for a visually-oriented written language course for the levels from A1 to B2. The main target group is that of young deaf adults aged 16 to 25 years. A secondary target group are older deaf people who are interested in improving their written language competence.

Keywords: Deaf education, written language teaching, sign language, interactive course.

1. Introduction

Most deaf people use one of the national sign languages as their first or preferred language. Unfortunately, in most European schools, the language of instruction is still the spoken/written language of that country. This poses huge problems for deaf students. As they do not have access to the acoustic channel, they can suffer serious consequences in their national language acquisition process (Caselli, Maragna, & Volterra, 1994; Volterra, Capirci, & Cappelli, 2001; Chesi, 2006; Bertone & Volpato, 2012). During their lives, they seldom get information presented in a visual way and they keep struggling with their difficulties with the written language throughout all their education paths. As they live in a hearing world, most information is transmitted via spoken or written language and not in a visual way; this also holds true for Deaf education, where they therefore often suffer from poor reading and writing competence (e.g., Holzinger, Fellinger, Strauß, & Hunger, 2006; Krausneker & Schalber, 2007). The Erasmus+ project "Deaf Learning" (2015-1-PL01-KA204-0165; homepage: www.pzg.lodz.pl/deaflearning) has addressed the abovementioned issue by preparing a course that takes into account the needs of the deaf.

2. The "deaf learning" project

The five partners (Poland as coordinator, Austria, Italy, Lithuania and the United Kingdom) have each designed a written language course for deaf people based on the Common European Framework of Reference for Languages (CEFR) for the levels from A1 to B2. The courses share a common underlying structure but are adapted for each country with respect to country-specific issues or the way grammar is taught. The five main themes cover topics which are relevant to the everyday life of deaf people, e.g., "Money Management" or "School and Career", and each topic is divided into six subtopics. For A1, the teaching materials were completed for each subtopic. In addition, the first main theme ("Relationships") is accompanied by a Moodle course with interactive exercises. For A2 to B2, the partners developed lesson plans and 16 reading texts on which teachers can base their actual teaching. The materials include guidelines for the teachers with background information and suggestions on how to use the course.

2.1. Survey of the target group

During the very first stages of the project, all project partners carried out a survey among the deaf community to get their feedback on their wishes and/or needs. The results were used as the basis for the course design.

Deaf people in all five countries were asked for a general feedback on the final aim of the project and a more detailed feedback on their educational backgrounds and their particular linguistic needs in relation to the contents of the proposed course.

The more general section of the survey was developed on the basis of the already-existing model used in the project "Give me a Sign" (Project ID: 2015-1-PT01-KA202-012971); a special section was added, dealing with the present project. The questionnaire was developed in English and subsequently translated into the national written languages (German, Italian, Lithuanian and Polish) as well as Austrian Sign Language and International Sign (IS) for those partners who did not produce a signed version of their own. The text and the sign language videos were uploaded to the online platform typeform.com. Each partner sent the questionnaire to deaf contacts, Deaf associations, and other stakeholders in order to reach more deaf people matching the target group.

The partners from Austria, Italy, and Poland each collected more than 20 responses, allowing the researchers to compare the results.

2.2. Data from Austria and Italy

In Austria, 72 % of the respondents had a profound or severe hearing loss, but only 28 % were native signers (the others learned Austrian Sign Language later in life, mostly aged 3 to 8), but 68 % regard their sign language competence as very good. In Italy, the majority of the respondents (50 %) had a profound hearing loss; 35 % had a severe hearing loss. 50 % of the Italian respondents acquired sign language from birth, while 23 % acquired it between the ages of 3 and 8 years. A great number of respondents in Italy (65 %) claimed to have a very good sign language competence. The majority of the Austrian deaf people reported moderate to bad experiences during their education (especially from compulsory education on). In Italy, the majority reported moderate or good experiences during their compulsory education. Those who attended an Italian university reported moderate or bad experiences.

The main complaint from the Austrian as well as the Italian deaf people was the lack of sign language use during classes; in Italy, they also mentioned the over-simplified contents provided by the teachers. In both countries, the interviewees preferred reading to writing, because – as one Austrian respondent put it – "writing German is too difficult". Mostly, the interviewees from both countries wanted to improve their grammar, but also their vocabulary. Most of the respondents in Austria as well as in Italy chose "Relationships" as the most interesting topic.

3. The Course

The "Deaf Learning" course differs from a regular course for foreigners who are learning a second language. The special features of the present course are:
- o   it is based on a sign bilingual teaching model;
- o   grammar topics are chosen on the basis of literature studies on deaf productions in written language;
- o   lessons are planned to be flexible and adaptable to a heterogeneous group of learners (as deaf learners are);
- o   since CEFR includes skills such as listening and speaking which do not apply to deaf learners, the framework serves only as a general pattern;
- o   deaf students are addressed as false beginners whose mother-tongue competence can range from good to poor, which influences their written language acquisition process;
- o   some lessons focus on Deaf culture (e.g. experience of Gallaudet University; deaf athletes telling their story; describing a classroom environment for deaf students, etc.);
- o   special attention is given to visual inputs (both in the face-to-face lessons and in the Moodle course).

In the following subchapters we provide a description of the sign-bilingual strategies applied (3.1.), the teaching approach and methodologies suggested (3.2.), and, finally, the visual impact of the course (3.3.).

3.1. Sign bilingual strategies

The "Deaf Learning" course is based on a bimodal-bilingual approach, meaning that the national sign language is used as the language of instruction (for the advantages of sign language for deaf and hearing-impaired people, cf. Krammer, 2013). According to specific teaching methods currently applied at Gallaudet University, the sign language (usually the first language acquired, L1) can be used in alternation with the national written language (usually L2) in what is called Concurrent Use frame methodology. The three patterns suggested for the "Deaf Learning" lessons are: Purposeful-Concurrent-Use, Preview-View-Review, and Translation (Gárate, 2012).

Purposeful-Concurrent-Use consists of a planned and well-thought-out alternation of written and signed codes, in order to underline some special topics. For instance, while teaching a lesson in sign language, the teacher continuously writes down, underlines (in a presentation), or fingerspells important terms and definitions.

Preview-View-Review is applied when preview and review moments are delivered in L1, while the core of the lesson is delivered in L2 (or the other way around: preview in L2, view in L1, review in L2).

Translation consists of translating parts of the lesson from one language to another, in order to make sure that the students have understood them. Among the sign-bilingual strategies applied to the "Deaf Learning" course, there are activities based on contrasting sign language and written language, highlighting their differences and similarities.

3.2. Teaching approach and methodology

The lessons are based on a special cycle in which the teacher introduces each subtopic with materials designed to meet the individual needs of the students (e.g., PowerPoint presentations, keyword posters, videos, discussions). The following steps of the lessons are connected to this introduction/preview: a short text for a contrastive grammar analysis with subsequent grammar explanations and exercises, leading to reading comprehension and writing exercises. Each lesson ends with a brief summary/review of the contents and some homework.

Within the preview and the review, the teachers can still adjust the lesson according to the needs of their students. When the students show a certain degree of familiarity with the grammar topic of the lesson, for instance, the teachers can choose to move the grammar explanation/exercises after the reading comprehension, in a bottom-up process. The students will be led to the grammar rules by the text itself: the relevant grammar constructions will appear in the text so that the students will be able to recognize them and to formulate their own hypotheses about them. If it turns out that the students have problems with working out the grammar, the respective explanations/exercises can be delivered by the teacher before the reading comprehension, following a top-down approach.

The Task-Based Language Learning and Teaching approach (TBLT) has also been taken into consideration, especially for those lessons in which the students are supposed to interact in written form. A task can be defined as a goal-oriented communicative activity aiming at the production of a specific outcome, in which the main purpose is exchanging meanings and not producing language forms (Willis, 1996). According to the task-based approach, the core of the lesson is the task phase itself, preceded by a pre-task phase and followed by a language focus phase. In the pre-task phase, the topic is introduced to the learners, and topic-related words and phrases are activated. During the task, the learners can use whatever knowledge they already have in L2 in order to solve the task. Before or during the task, the learners have the chance to read (or hear, in case of hearing students) examples of L2 in use, which they can keep as models or just process as language input. The teacher's feedback should come when the students want it most: at the beginning stage, during planning, or at the final stage, during the report. Finally, the language focus phase allows the learners to analyse some of the features of the language they have already processed during the task and practice the components (explicit study of language form). TBLT can be combined with the lesson cycle by considering the preview as a pre-task activity, the writing activities as part of the task, and the review and the corrections as the language focus. Exposure to the L2 can be provided by the teacher as necessary. Deaf students appreciate working for a practical aim (i.e. solving a problem, making a presentation, playing a game, etc.), but they get easily distracted, and cooperative tasks can last very long, which may compromise the language focus moment. Therefore, TBLT is only suggested as one possible interpretation of particular lessons.

Teachers are provided with this high degree of flexibility because deaf learners are false beginners and their language competence is sometimes unpredictable. As attested in literature (Vollmann, Eisenwort, & Holzinger, 2000; Chesi, 2006; Trovato, 2013), deaf people's written language production can be considered as a non-standard language, characterized by the lack and/or the wrong use of functional words (articles, prepositions, conjunctions, etc.), auxiliaries and verb conjugation, pronouns, and noun-adjective/verb-subject agreement. Despite acknowledging these facts, it is impossible to predict which grammar elements will be tricky for all students. Variables like degree and age of the hearing loss, the age of acquisition of a sign language, having hearing or deaf parents, the type of school attended, etc., make deaf learners very different from one another, creating heterogeneous groups of students even within small numbers (cf. Caselli, 2014).

The prototype course was tested with deaf students in Italy and in Austria. While Italy focused on the main target group, Austria tried out the lessons with deaf collaborators who are fluent signers to represent the secondary (older) target group. The respective feedbacks were integrated into the final version of the course (for details on the testing, cf. Volpato, Hilzensauer, Krammer, & Chan, 2018, in press).

3.3. Visual impact of the course

The visual impact of the course is realised through the sign-bilingual method as well as through key pictures in the texts (especially at the basic language level), in order to aid the students' comprehension of each part of the text and the supporting Moodle course. All the materials for A1 which are to be printed are designed in a very simple and uncluttered way: for the activities, the instructions are kept linguistically simple and short to make it easier for the students to carry out the tasks by themselves and each page contains only one or two exercises; the texts for the reading activities are true examples of each written national language (slightly adapted at the most), but still rich in language structures according to the respective level of difficulty.

For the grammar explanations, the text was kept short and concise (with overview tables, if appropriate). Free clipart was used to visualise the contents, furthering the students' understanding. For example, the definite articles and the three respective genders are represented by the picture of a family: man (male gender), woman (female gender) and children (neutral gender). The same picture shown twice serves to explain the plural forms. An officer giving orders embodies the imperative form, etc. Funny pictures do not only help the students to understand/memorise the grammar sections, but they also serve to lighten the mood.

The materials of the first six A1 lessons from the face-to-face course also served as the basis for the accompanying Moodle course. The Austrian Moodle version follows the structure of the face-to-face course, but the contents were adapted and/or simplified so that students can work with the course on their own (although it is recommended to use it in connection with face-to-face classes). Moodle allows not only the insertion of pictures but also of sign language videos; the same holds for the H5P exercises that were used. H5P offers a wide range of possible activities (from creating hotspots in pictures or graphics to marking something in a text) and allows the design of visually attractive exercises. The Austrian course designer opted for an automatic evaluation of any exercise where no student-teacher interaction is necessary (for some of the exercises, the students have to upload text and/or video files, which need to be corrected individually by a tutor): H5P corrects the exercises in a way that is ideal for visually-oriented people, e.g. by highlighting or marking correct and wrong answers with different colours and showing gold stars for correct answers. It is possible to add feedback (e.g., "Please look at the explanations again", when the answer was wrong), to reveal the correct solutions, and to repeat the exercise. If an activity consists of more than a single question, a progress bar is provided for the students' orientation (for information on the Moodle course, cf. also Volpato et al., 2018, in press).

4. Conclusion

The challenges in the lives of deaf people who are using a sign language as their first or preferred language are manifold. This is due to the fact that in most countries the education is not adapted to their visual needs, which may have serious consequences on their overall development. Most of them leave compulsory school with far less knowledge (in all areas) than their hearing peers. The "Deaf Learning" language course addresses this well-known fact – which is often neglected by the governments – by developing a course which takes into account the specific features of deaf learners: sign language is the language of instruction; teachers who want to deliver the course must be fluent in sign language and they have to adapt to the needs of the students, following a student-centred approach. Especially at the levels A1 and A2, the teaching and learning materials must be kept very visual and simple; also, they must have a good and clear structure. This holds especially for the grammar explanations and exercises. The visual Moodle exercises are a good support for the face-to-face course.

During the trial lessons in Austria and Italy, it became (once again) obvious how different the national written language knowledge of the deaf students is. The special design of the "Deaf Learning" course proved to be a suitable tool to deal with this fact. Based on the experiences of the trial lesson, the final course design provides the teachers with a considerable amount of flexibility to react to the different needs of the students. Through this, the latter feel more comfortable and their motivation is raised.

The "Deaf Learning" language course represents one step towards an equal access to education for this target group. It also aims at showing to young deaf adults that learning the written national language can be fun, that it is worth the effort and that they will benefit from it in their future lives.

References

Bertone, C., & Volpato, F. (2012). Le conseguenze della sordità nell'accessibilità alla lingua e ai suoi codici [The consequences of deafness in accessing the language and its codes]. *Educazione Linguistica Language Education*, 1, 549-580.

Caselli, M. C. (2014). Crescere con due lingue senza paura [Growing up with two languages without fear].
Psicologia clinica dello sviluppo, 18(3), 428-431. Retrieved April 17, 2018, from http://www.lissubito.com/wp-content/uploads/2015/10/Volterra-chi-ha-paura-dei-segni.pdf

Caselli, M. C., Maragna, S., & Volterra, V. (1994). *Linguaggio e sordità* [Language and deafness]. Firenze: La Nuova Italia.

Chesi, C. (2006). *Il linguaggio verbale non-standard dei bambini sordi* [The non-standard verbal language of deaf children]. GAIA srl-Edizioni Univ. Romane.

Gárate M. (2012). *ASL/English Bilingual Education* (Research Brief No. 8) in Visual Language and Visual Learning Science of Learning Center. Washington, DC. Retrieved April 16, 2018, from http://vl2.gallaudet.edu/files/3813/9216/6289/research-brief-8-asl-english-bilingual-education.pdf.

Holzinger, D., Fellinger. J., Strauß, U., & Hunger, B. (2006). *Chancen Hörgeschädigter auf Eine Erfolgreiche Schulische Entwicklung (CHEERS)* [Chances of hearing-impaired people for a successful educational development]. Linz, Institut für Sinnes- und Sprachneurologie/Gesundheitszentrum für Gehörlose, Krankenhaus der Barmherzigen Brüder. Retrieved 17 April, 2018, from
https://www.barmherzige-brueder.at/unit/issn/sprachundtherapiezentrum/wissenschaft.

Krammer, K. (2013). The Benefits of Sign Language for Deaf Children with and without Cochlear Implant(s). *European Scientific Journal*, 4, 341-349. Retrieved 17 April, 2018, from https://eujournal.org/index.php/esj/article/view/2485.

Krausneker, V. & Schalber, K. (2007). *Sprache Macht Wissen. Zur Situation gehörloser und hörbehinderter SchülerInnen, Studierender & ihrer LehrerInnen, sowie zur Österreichischen Gebärdensprache in Schule und Universität Wien. Abschlussbericht des Forschungsprojekts 2006/2007* [Language Makes Knowledge. On the situation of deaf and hearing-impaired pupils, students and their teachers, as well as about Austrian Sign Language in schools and at the University of Vienna. Final report of the research project 2006/2007]. Innovationszentrum der Universität Wien, Verein Österreichisches Sprachen-Kompetenz-Zentrum (mit Unterstützung der Abt I/8 des bm:ukk). Version 2. Retrieved 17 April, 2018, from http://www.univie.ac.at/oegsprojekt/.

Vollmann, R., Eisenwort, B., & Holzinger, D. (2000). Zweitsprache Muttersprache: Die schriftsprachliche Deutsch-Kompetenz österreichischer Gehörloser [Second Language Mother-tongue: On the written language competence of the Austrian Deaf]. *Zeitschrift für Interkulturellen Fremdsprachenunterricht,* 5(2), 1-22. Retrieved 17 April, 2018, from http://tujournals.ulb.tu-darmstadt.de/index.php/zif/article/view/622/598.

Volpato, L., Hilzensauer, M., Krammer, K., & Chan, M. (2018, in press). Teaching the National Written Language to Deaf Students: A New Approach. In K. Miesenberger & G. Kouroupetroglou (Eds.), *ICCHP 2018, Computers Helping People with Special Needs.*

Volterra, V., & Capirci, O., Cristina Caselli, M. (2001). What atypical populations can reveal about language development: The contrast between deafness and Williams syndrome. *Language and Cognitive Processes*, *16*(2-3), 219-239.

Willis, J. (1996). *A framework for task-based learning.* Series: Longman handbooks for language teachers. Harlow: Longman.

CONCEPTIONS ABOUT FACEBOOK USES IN HIGHER EDUCATION

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Abstract

Information and communication technologies appear as integrated resources at different levels in university education. This situation causes an inquiring investigation about the different uses and applications that are applied to the main involved agents: professor and student.

This work is part of a descriptive and exploratory study that systematizes the conceptions that the student and the teaching staff have in relation to the use of the social network Facebook; in particular, we focus on the practice of the subjects that promote the application of this tool as a resource that goes beyond maintaining direct contact between teacher and student.

Through a mixed methodological design, on the one hand we use a quantitative instrument for the students' opinion and, on the other hand, we propose a semi-structured interview with the professors using this social network in their classes, with the objective of triangulating the information and analyzing the pedagogical relevance of Facebook in higher education.

The results are available for shared conclusions in other studies that allow communication between teachers and students, teamwork and peer tutoring, or contribution as a teaching resource from which generates significant knowledge of the subjects and achieve a social learning.

Keywords: Facebook, higher education, socials networks, ICT.

1. Introduction

Internet has become a key element to facilitate and manage a lot of information and knowledge. In this sense, the teaching-learning process through Internet can be an opportunity in Higher Education, since we can reach more students achieving a development of learning that goes beyond what was acquired in the classroom (Betts, Kramer and Gaines, 2011).

The use of Internet entails a change in the more traditional teachings, because tasks assigned directly to the professor, such as the search of information and knowledge, are currently available to students (Siemens and Weller, 2011).

2. Learning through Facebook

Facebook and other social networks have become a new dimension in knowledge and learning processes (Wodzicki, Schwämmlein and Moskaliuk, 2011) and this is highlighted by studies that address the situation in university classrooms; as the works of Gómez-Hurtado, García-Prieto and Delgado-García (2018); Álvarez and López (2013); Gray & Carter (2012); Delgado-García, García-Prieto and Gómez-Hurtado (2018); Liccardi et al. (2007), Mendiguren et al. (2012), Reina, Fernández and Noguer (2012), Tuñez and Sixto (2012) among others.

From these works, some relevant conclusions are derived for the main agents involved:

a) For students, the use of Facebook involves the generation of collaborative environments, the acquisition of new skills, the reinforcement of motivation or a greater sense of self-regulation of their learning process.

b) For the professor, this social network is understood as a tool that diversifies the spaces (physical) in which to develop the teaching and learning process, as well as understand the construction of knowledge from a different perspective, where the generation of shared information and open is a possibility to create real learning communities.

From these and other works, we can affirm that Facebook is one of the ICT tools that is inserted in Higher Education through innovative experiences that try to make visible their potential for the development of meaningful and integral learning.

3. Methodological design

This work, framed in a broader study, starts from a descriptive approach and presents a mixed design, where quantitative (questionnaire) and qualitative (interviews) instruments are used. For the validation of the tests, the expert judgment test and a pilot test are used, in addition to obtaining a reliability for the questionnaire (0.86 in Cronbach's alpha).

In this work we use an intentional or convenience sampling with which a total of 144 students (45 men, 99 women) are selected, who have come into contact with Facebook during the development of a subject, and in the same way they are also selected 5 professors (3 women, 2 men) that use this social network for the teaching process.

To analyze and be able to triangulate the results obtained, the software Spss v.19 is used in the case of the questionnaire. Specifically, descriptive statistics are executed. And for the information obtained in the interview we use the software Atlas.ti v.19.

4. Objectives

The objectives of this contribution are:
- Describe the use of Facebook in the teaching and learning process in higher education.
- Identify the possible factors that facilitate or hinder the use of Facebook in university education.

5. Results and discussion

From the results obtained, we observed how the use of Facebook in some subject appears as a positive experience for a large part of the students (see graph 1). This confirms what Siemens and Weller (2011) contributed when they affirmed that social networks in Higher Education are resources that promote positive factors in order to improve the communication capacity among students.

Graph 1. The overall assessment of the experience with social networks (Facebook) is positive.
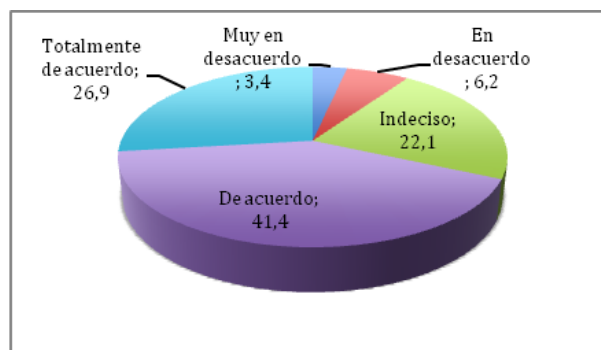
In the same way, although more cautiously, students also claim (39% versus 32.2% of undecided) that the use of social networks is a strategy that allows them to develop their own learning process, thus following the line marked by works such as Meso, Pérez and Mendiguren (2010a) that defend the relevance of these networks as a useful didactic resource to build meaningful knowledge. But the potential of social networks goes further and has a positive impact on other factors linked to learning, such as the relationship between the main agents involved in it:

a) The student-professor relationship: specifically, the students (56.1%) state that their relationship has improved markedly and, for their part, the teaching staff also stresses that "the levels of interaction have varied, greater commitment of the students is appreciated and more dialogue too "(Entr.2_P1). The digital channel is a way of establishing and fostering new interpersonal relationships (Moorman and Browker, 2011).

b) The student-student relationship: the data (80.9% ensure that social networks favor relationships between equals) confirm the results obtained in other studies (Gómez-Hurtado, García-Prieto and Delgado-García, 2018 Sotomayor, 2010; Meso, Pérez and Mendiguren, 2010b) where new forms of interpersonal communication are visualized through social networks, giving rise to new learning communities.

In addition to the communicative level, the use of these digital resources has brought with it the development of new didactic strategies such as peer tutoring (Delgado-García, García-Prieto and Gómez-Hurtado, 2018) and we can see this in the data obtained , when 57% of students say that this strategy is developed in the classroom, or when professors say that "peer tutoring is key to address many practical activities through social networks and promote the revitalization of knowledge" (Entr.1_P4). Also, it is evident that they suppose an essential complement for face-to-face teaching given the virtual nature that they offer (Reid, 2012) and this is what is included in the following graph (See graph 2).

*Graph 2. The use of Facebook facilitates virtual tutoring.*
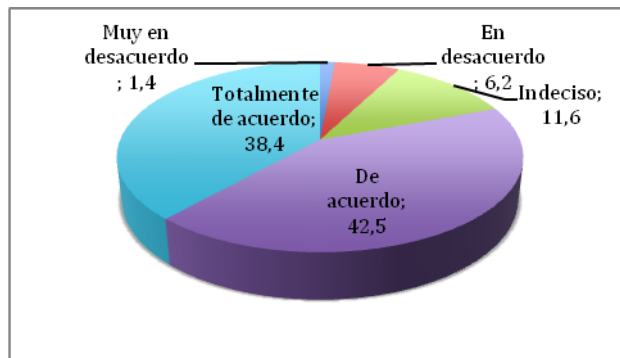
However, the opinion of a significant part of the students (48%) suggests that these possibilities do not translate into a clear benefit to improve the tutorial action (compared to 39.7% who support it).

In addition to tutoring, the use of Facebook has developed new forms of learning among students and has enhanced its digital competence (affirmation supported by 56.9%). On the other hand, the teaching staff assures that "the students are much more autonomous to select and manage the information that is used in the development of the subjects, in the classroom and outside of it" (Entr.2_P5). In both cases, it is appreciated that the physical limits, in which the learning process was framed a few years ago, are overcome and how emerges a new much more open and global space for accessing and sharing knowledge (Area, 2000).

The most obvious consequence that social networks, in our case Facebook, are positive tools for the student's learning process, is that, as we can see in Graph 3, a large part of the students consider this network as a useful didactic resource to acquire content and, for its part, the professor also states that "through Facebook we can build different types of activities that motivate the student and that address transversal contents that otherwise would be more difficult to address" (Entr.1_P2).

Graph 3. I consider that Facebook is a useful didactic resource for content acquisition.
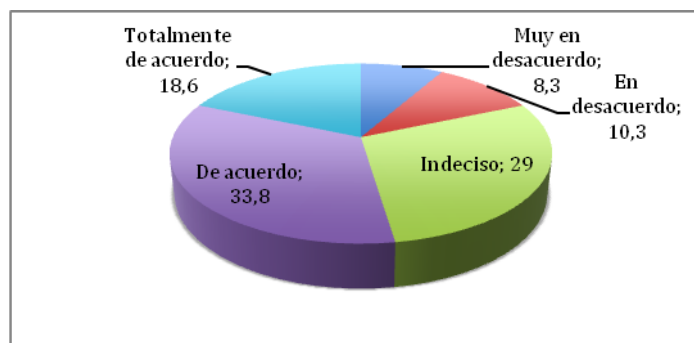
Based on these possibilities offered by this social network and in line with the works of Gray and Cartel (2012), on the one hand, students affirm that Facebook contributes to creating shared, social (63%) and globalized knowledge (including other subjects) (58.2%); and on the other hand, the professors stress that "the use of Facebook as a didactic tool has positively interfered with the learning process of the

student and for the professor it becomes a way to guide and propose activities that allow reflection and management of the knowledge" (Entr.1_P3).

6. Conclusions

The incorporation of social networks to the level of Higher Education has meant a new approach in the development of the teaching and learning process mediated by ICT. Thus, responding to the objectives initially proposed and starting from the results previously arranged, we can think that both students and professors are predisposed to host social networks as pedagogical resources although there is still some caution in this plane, since from the social perspective is more clearly appreciated that its use acquires a remarkable applicability and acceptance.

It is not only about creating an environment from which offer information to the student (as a repository), but also to promote interaction between the agents involved in the teaching and learning process in order to generate meaningful knowledge applicable to the reality of that process. For this, professors must take the initiative and manage an optimal use and for that, they need training and knowledge about the possibilities of this resource; otherwise, the characteristics that make this social network one of the most used in terms of social relations may prevail over academic-educational possibilities that can be granted and, in that case, we would fall into the error of using it exclusively as another support in Higher Education.

References

Álvarez, G. y López, M. (2013). Análisis del uso de Facebook en el ámbito universitario desde la perspectiva del aprendizaje colaborativo a través de la computadora. *Edutec, 43*, 1-15. Recuperado de http://edutec.rediris.es/Revelec2/Revelec43/pdf/Edutec-e_n43-Alvarez_Lopez.pdf

Area, M (2000). ¿Qué aporta internet al cambio pedagógico en la Educación Superior? En Pérez, R. (Coord). *Redes multimedia y diseños virtuales,* (pp, 128-135).Actas del III Congreso Internacional de Comunicación, Tecnología y Educación. Oviedo: Universidad de Oviedo.

Betts, K., Kramer, R. & Gaines, L. (2011). Online Faculty and Adjuncts: Strategies for Meeting Current and Future Demands of Online Education Through Online Human Touch Training and Support. *International Journal of Online Pedagogy and Course Design, 1*(4), 20-38.

Delgado-García, M.; García-Prieto, F.J.; Gómez-Hurtado, I. (2018). Moodle y Facebook como herramientas virtuales didácticas de mediación de aprendizajes: opinión de profesores y alumnos universitarios. *Revista Complutense de Educación,* 29 (3), 35-52. [en prensa].http://dx.doi.org/10.5209/RCED.53968

Gómez-Hurtado, I., García-Prieto, F.J. y Delgado-García, M. (2018). Uso de la red social Facebook como herramienta de aprendizajes en estudiantes universitarios: estudio integrado sobre percepciones. *PerspectivaEducacional, 57*(1), 98-123.

Gray, K. & Carter, M. (2012). "If Many Were Involved": University Student Self-Interest and Engagement in a Social Bookmarking Activity. *International Journal of Online Pedagogy and Course Design*, 2(4), 20-31.

Liccardi, I., Ounnas, A., Pau, R., Massey, E., Kinnunen, P, Lewthwaite, S., Midy, M. &Sarkar, Ch. (2007). The Role of Social Networks in Students' Learning Experiences. *ACM SigcseBulletin, 39*(4), 224-237. Recuperado de http://dl.acm.org/citation.cfm?id=1345442

Mendiguren, T., Meso, K. & Pérez, J. (2012). El uso de las redes sociales como guía de autoaprendizaje en la Facultad de Comunicación de la UPV/EHU. *Didáctica de la Lengua y la Literatura, 6*, 107-122.

Meso, K., Pérez, J. y Mendiguren, T. (2010a). Estrategias de enseñanza formal e informal. En SIERRA, J.; SOTELO, J. (Coord.). *La incorporación de las redes sociales como herramienta en las aulas. Métodos de innovación docente aplicados a los estudios de Ciencias de la Comunicación*. Madrid: Fragua.

Meso, K.; Pérez, J.; y Mendiguren, T. (2010b). *Las redes sociales como herramientas para el aprendizaje colaborativo. Presentación de un caso desde la UPV/EHU*. Congreso Internacional Europa/ América Latina ATEI. Alfabetización mediática y cultural digitales. Sevilla: Gabinete de Comunicación y Educación.

Moorman, J. &Bowker, A. (2011). The University Facebook Experience: The Role of Social Networking on the Quality of Interpersonal Relationships. *American Association of Behavioral and Social Sciences Journal, 15*, 1-23.

Reid, S. (2012). The Changed Role of Professor in Online Courses.*International Journal of Online Pedagogy and Course Design*, *2*(1), 21-36.

Reina, J., Fernández, I. & Noguer, A. (2012). El uso de las Redes sociales en las Universidades andaluzas: el caso de Facebook y Twitter. *Revista Internacional de Relaciones Públicas,4*(2), 123-144.

Siemens, G. & Weller, M. (2011). El impacto de las redes sociales en la enseñanza y el aprendizaje. *Revista de Universidad y Sociedad del Conocimiento (RUSC),8*(1), 157-163. Recuperado de http://rusc.uoc.edu/ojs/index.php/rusc/article/view/v8n1-siemens-weller/v8n1-siemens-weller

Sotomayor, G. (2010). Las redes sociales como entornos de aprendizaje colaborativo mediado para segundas lenguas. *Revista Electrónica de Tecnología Educativa*, 34, 1-16.

Túñez, M. & Sixto, J. (2012). Las redes sociales como entorno docente: análisis del uso de facebook en la docencia universitaria. *Pixel-bit, 47,* 77-92.

Wodzicki, K., Schwämmlein, E. &Moskaliuk, J. (2012). "Actually, I Wanted to Learn": Studyrelated knowledge exchange on social networking sites. *Internet and Higher Education*, *15*(1), 9–14. doi: 10.1016/j.iheduc.2011.05.008

SOCIOCULTURAL PROBLEMS OF IMMIGRANTS IN EUROPE

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Abstract

Europe is a continent that it receives a crowd of people from others continents every years, they are calling immigrants. These immigrant people, when they arrive to Europe, they have a lot of sociocultural problems that they make their adaptation difficult. Some of the European countries that most immigrant people receive, throughout the year are Spain, Italy or France, because they are very close to the African coast. They have a lot of different problems in Europe. In this article, we go to speak about the sociocultural problems, dividing them, to their better understanding, in social problems and cultural or educational problems. The immigrant people have a lot of social problems among which are, for example, illegal or irregular immigration, the prostitution or the marginally or social exclusion risk. Between educational problems we can find some adaptation difficulties, as the language or the different custom that this type of student has with respect to the European educational systems.

Keywords: Immigration, sociocultural problems, Europe, marginally, language.

1. Introduction

Europe is a continent with a extensión of 10,18 millions km2, and it has a poblation about 750 millions of habitants approximately. Part of that poblation is inmmigrant, to be more exact 5% of the total, according to Eurostat (2017) about 35 millions of people that they living in Europe, they went to the other continents. This people, when they arrive to Europe, thay have different sociocultural problems.

To start, we´ll talk about this problematic from the social point of view, when the illegal immigration o irregular immigration is a huge problema, Malamud (2007). The irregular immigration in Europe is a problematic with a very difficult solution to wich various measures have been adopted, as the Clandestine Project, wich it was established by the European Union to improve their estimates about the irregular immigrant poblation. They used a diversity of methods to the different members of the European Union and the quality of estimations that they was uneven, Clandestino (2009). A reason that it can lead to uncertainty is the lack of exit controls in the most part of countries in the European Union, even the arrivals were registered exactly, the quantity of exits is very difficult to evaluate.

2. Social problems of immigrant people in Europe

This ilegal immigration have strong consequences to the inmmigrant people in Europe, how it can be the marginality or social exclusion. The social exclusion is a word that it is used to talk about negation or loss of essential rights in the lives of citizens. A definition would the process by wich the people or groups of people are totally or partially excluded of a full participation in the society that they are living. Is the opposite process to integration that they leads to a privation of the rights in several ambits how to labor, economic, cultural, personal, social or political among others. The poverty has increased in all countries, this concept is used more assidously because the rich are more rich and the por are more por. In Spain, for example, according to information to Hernández (2013) the 28,6% of the poblation is in risk of social exclusion and poverty. They are too many people because, in Spain there are 43.420.000 habitants, and this data suppose 13,5 millions of habitants have this problem. They are a lot of people in a advanced country, but the economical crisis has done plenty of damage. To size the poverty and social exclusion rate it was created a indicator called AROPE, At-Risk-Of Poverty and Exclusion. This indicator measure the economic poverty and complements it with aspects of exclusion, combining rent factors, several material privation and low intensity in the job. In Spain this indicator measure the exclution making a classification by autonomous communities and a calculation about the totally of immigrant people in exclusion Risk, in all the country. How we show in the following chart.

Chart 1. About the evolution of AROPE indicator, years 2014-2016.

Community	Exclusion rate (%) 2014	Exclusion rate (%) 2016
Navarra	14,5	13
País Vasco	15,3	15,9
La Rioja	20,1	17,4
Cataluña	21,8	17,9
Asturias	23,4	18,5
Aragón	20,7	18,7
Islas Baleares	23,8	19,1
Madrid	19,2	21,7
Castilla y León	26,1	23,2
Cantabria	27,4	24,6
Galicia	23,8	25,4
Melilla	25,8	29,3
Valencia	34,7	30,5
Región de Murcia	44,9	34,8
Extremadura	39,8	35,8
Castilla La Mancha	36,9	37,9
Andalucía	42,3	41,7
Ceuta	47,9	41,9
Islas Canarias	37	44,6

Source: INE/EAPN España

In this chart we can see the Poverty and social exclusion rate in all the autonomous communities and in the two autonomous cities (Ceuta and Melilla) in Spain and it evolution from 2014 to 2016. Here we can see some changes, especially in the community/city that it has the highest rate, it was Ceuta in 2014 with 47,9% of the poblation in risk of poverty or social exclusion, what it was half the population, 40.236 habitants, of a total of 84.000 habitants. In 2016, the rate decreased until 41,9%. This year the community with te highest rate was Canarias, where 44,6% of the poblation (937.500 habitants of a total of 2.102.000 habitants) were in risk of poverty or social exclusion.

Another problem that immigrant people in Europe deal, it is a poor access to housing. The need for accommodation to the immigrant people varies according to their specific momento of its integration process. The overcrowding allows the owner, to expel the immigrant people if it suits him, if he is based on hygiene reasons, blaming the victims for the conditions of precarious housing that they suffer, Leralta Piñán (2005). All this can lead immigrant people to seek shelters for homeless people, and even to end up in prison.

Another problematic that immigrant people in Europe face is the job search and with this, the acquisition of precarious Jobs with poor salaries. One of the job that the immigrant people are dedicated is the agricultura. This are causes that they take advantage of the immigrant people and they don´t pay a salary commensurate with the work that they do. All this is supported by Roquero (1996), he said that new jobs had been created because there was a lot of immigrant people, and the indegenous people didn´t want this jobs, therefore this jobs were given to immigrant people. This situation happens today too.

Another precarious employment facing people who migrate to European continent, and in this case the majority are women, is the prostitution. According to Hernández (2013) more tan 90% of women who pratice prostitution in Europe are immigrants and all of them, they do it forced by the circumstances, according to data contributed by "Andalusian Institute of Women" (2013). (Hernández 2013) – vice president of "Committee of support sex workers"- she clarified in a interview that "nothing is in the Street because she wants, the prostitution is a departure from necessity. The necessity takes you to try, you see it as an easy way, but it really is not". The crime to wich many are forced is another problem that the immigrant people in Europe have to face. The link between the immigrant people and the crime is a huge engaged social question. The mass media usually post sensationalists news where they create controversy and they magnify the information, extrapolating a determined situation to a whole collective. According to an Igartua, Muñiz and Otero study (2006) taking as reference "Del Framing Theory", they analized the content about the informative treatment of immigration in the press and the newcast in Europe, because the mass media take part in the formation of stereotypes and prejudiced attitudes towards immigrant people, they showed that the most news about immigrant people refer to matters of a negative nature, also they link the crime with the immigration. In addition, these news had received more privileged locations tan other type of news. All this brings with it a reflection on the cognitive consequences of this media practice, because the privileged location of negative news about immigration receives great visibility, turning a social process into a problem for public opinion. Once detailed the most strictly social problems, we´ll go to explain the educational problems that immigrant people have when they arrived to the European continent.

3. Educational problems of immigrant students

A series of phenomena linked both to economic globalization and population movements (Sassen, 2001) and to the identity demands of very diverse groups are opening a new horizon of postnational citizenship (Tambini, 2001), for the that school political socialization had not been thought of. Among these phenomena, the growing multiculturalism of the populations residing in the same national territory is perhaps one of the elements that most clearly obliges us to reflect on the need to forge a new conception of citizenship capable of providing a new project of rights, participation and belonging. This reflection also includes the reconsideration of that classic apparatus of political socialization that is the modern school. Facing the challenge that multiculturalism supposes for the school's contribution to the formation of an active and more complex citizenship is, therefore, a fundamental part of one of the most important tasks reserved for us in the 21st century: the renewal of learning citizen coexistence.Analyzing these data, it can be understood that European society is changing if we look at it from the perspective of culture and education, since a large majority of individuals from different countries are accessing it.

The path of inclusion towards exclusion is full of circumstances, factors and diverse variables, usually linked to economic conditions, to which are added other reasons such as health, unemployment or educational deficit. (Fernández, 2017, p.123). Regarding this last aspect, one of the primary functions of the education system is to try to interpose, acting pedagogically with all children and young people, so that they do not cross that exclusive threshold and, in their case, help them to recover the path towards the inclution. Thus, Quillian (2006) points out that discrimination can be motivated by prejudices, stereotypes or racism, but the definition of discrimination does not presume a single latent cause.

Often, the discourse on intercultural education and the integration of immigrants, especially immigrant students, is going in a more optimistic direction than the reality represented by trends, attitudes, legislation or the academic results of immigrant students. Education professionals must face the difficult task of solving a series of problems that are much more complex than mere schooling seems to assume. Six obstacles or difficulties faced by the good progress of education with immigrants are presented below. These problems are related to increased schooling in public schools, difficulties with the language or languages of the school, the worst academic performance, the hardening of legislation on immigrants, poor attention to the languages and cultures of origin and existence of a refusal fund regarding the presence of immigrant students in the classroom.This analysis is not offered with the intention of falling into fatalistic or deterministic positions, but with the aim of knowing well what are the main challenges with which an education that deals with these groups has to face and thus be able to better overcome the barriers that take you away from genuine integration. Otherwise, intercultural discourse runs the risk of following its own path in an autistic way, while social practice moves us more and more away from the ideal objectives marked by intercultural education. Immigration is not a recent phenomenon in our environment. Statistics are available for more than a decade and the trend that shows us is that the population of foreign origin continues to increase every year. This is reflected in the school, and the percentage of students in schools varies by virtue of many factors, but especially the role played by the host territory is relevant. According to the M.E.C., for the 2016-2017 academic year, the school population of immigrant origin reached these levels shown in the following figure 1:

Figure 1. Percentage distribution of foreign students by geographical precedence. Course 2016/2017.
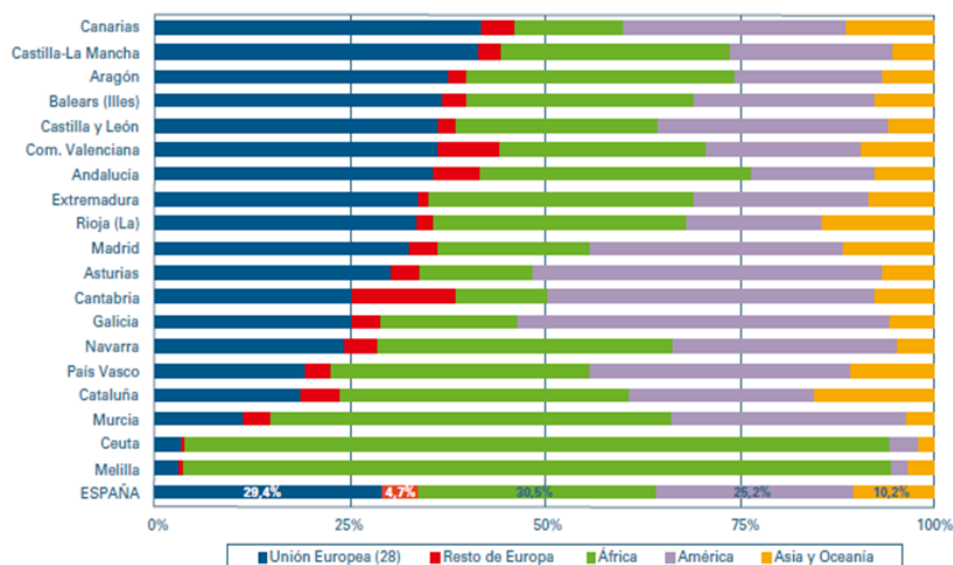
We verified that there are Autonomous Communities in which the immigrant students are much more represented than in others, even so there is a large representative percentage in the different communities. In Spain, students in general are distributed among three types of centers that are public, private and arranged. The figures from the Spanish state (MEC, 2015-2016) show that, taking into account the total number of students, most of them go to public schools, while a much smaller percentage can be found between private and private schools, as can be seen in the following figure 2.

Figure 2. Distribution of foreign students by ownership / financing of the 2015/2016 center.

	%Total	% Centros Públicos	% Enseñanza concertada	% Ens. privada no concertada
TOTAL	**100,0**	**81,1**	**13,6**	**5,4**
Andalucía	100,0	84,0	7,8	8,2
Aragón	100,0	81,3	17,0	1,7
Asturias (Principado de)	100,0	81,7	16,3	2,0
Balears (Illes)	100,0	76,6	16,1	7,4
Canarias	100,0	86,1	4,0	9,9
Cantabria	100,0	72,0	26,9	1,2
Castilla y León	100,0	81,5	17,3	1,2
Castilla-La Mancha	100,0	90,7	8,7	0,7
Cataluña	100,0	80,8	13,2	6,0
Comunitat Valenciana	100,0	82,7	11,3	6,0
Extremadura	100,0	91,0	8,5	0,4
Galicia	100,0	83,9	14,3	1,9
Madrid (Comunidad de)	100,0	75,4	17,7	7,0
Murcia (Región de)	100,0	88,5	9,6	1,8
Navarra (Comunidad Foral de)	100,0	84,1	15,4	0,5
País Vasco	100,0	70,5	28,6	0,9
Rioja (La)	100,0	80,5	18,7	0,7
Ceuta	100,0	99,0	0,9	0,1
Melilla	100,0	98,6	1,4	0,0

Another aspect in which immigrant students encounter difficulties in educational centers is the native language. The influence of competence in the language of the school is a determining factor in school results. In this regard, in the case of the host, majority or regional languages, their importance lies in the fact that they represent a key instrument for the integration of these students (European Parliament, 1998).

Linguistic deficits have a decisive influence at crucial moments, such as the beginning in secondary education or professional education. The fundamental question that can be asked at this point is the following: How much time is necessary for the student or immigrant student to achieve a similar level to the native student in the language of the school? When the immigrant student is schooled like the rest of the natives, at two or three years, there does not seem to be any special difficulties in acquiring the vehicular language of the school, but when the immigrant student comes once the schooling begins, the difficulties increase proportionally (Cummins, 2001). Hakuta, (cited by Cummins, 2001, p.42) highlights several studies in which it is noted that: "Someone who is not an English speaker requires approximately 5 years to reach fluency in that language, meaning that whoever starts in first grade will not speak English fluently until the end of the fifth, more or less". The problem seems to lie, following Cummins, in that immigrant students can quickly acquire considerable fluency in the dominant language, but it takes five years (and often much more) to regain ground with native speakers in academic aspects. For Cummins (2001), the consequences are obvious: "interventions that maintain the long-term academic progress of immigrant students should be sought, instead of waiting for some quick-fix solution in the short term."

Another problem that the professional working with immigrants has to face is that they must start from the basis that not all of society, not even the school community, is on the same line of integration or interculturality. Some studies, and increasingly because of the economic crisis, show us to the public opinion that to a certain degree it is contrary to the admission and integration of immigrants and also of the immigrant students. In the aforementioned CEAPA report (2004), when analyzing the school rejection / acceptance factors perceived by the immigrant population in the field of educational centers, two fundamentally stand out: on the one hand, racial prejudice, both on the part of the natives as well as on the part of immigrant groups, which encourage the discriminative treatment and the reciprocal isolation. Secondly, it is indicated that poverty is a factor of generic discrimination, regardless of the country of origin.

4. Discussion and conclusion

Spain is a diverse country, where many immigrants from different cultures and religious origins arrive all days. The Siria´s war, the problems to find any work or the difficult to have some sexual identities, they are the causes that they need to travel to a "new world". The reality that these immigrants find when they arrive to the "new world" is very different to they imagine it at first, and why they need to start a long way around the other countries, on foot, in patera or risking his life, camouflaged in trucks.

How we explained in this text, the sociocultural reality of these immigrants is very different they imagined it. Malamud (2007) said that the irregularity that these immigrants present, it aggravates the problem and the sociocultural difficult. The lack of work magnifies the difficult to live autonomously in the new country. It prevents his personal and professional development and this limits the immigrant to the reception center and to receive State aid. This situation encourages the social exclusion and the poor of the majority of immigrants that we receive (Hernández, 2016). In this work we pretend to expose and to develop the sociocultural difficult of the immigrants. Considering of special relevance, the lack of employment and the circumstance of social exclusion that this generates.

References

Carrasco Carpio, C. (1999). *Mercados de trabajo: los inmigrantes económicos.* Retrieved from http://data.theeuropeanlibrary.org/BibliographicResource/3000145405703

Castles, S. (2010). Migración irregular: causas, tipos y dimensiones regionales. Retrieved from http://biblioteca.clacso.edu.ar/gsdl/cgi-bin/library.cgi?a=d&c=mx/mx-037&d=66019856002oai

CEAPA (2004): Encuentro sobre población inmigrante y su relación con el ámbito escolar. Madrid, 27 y 28 de noviembre de 2004. Confederación Española de Asociaciones de Padres de Alumnos. Documento fotocopiado.

Clandestino (2009). «Comparative Policy Brief-Size of Irregular Population», Hamburgo,

Clandestino Research Project, http://clandestino.eliamep.gr.

Cummins, J. (2001): «¿Qué sabemos de la educación bilingüe? Perspectivas psicolingüísticas y sociológicas». *En Revista de Educación*. (326). MEC. Madrid.

Defensor del pueblo (2003): *La escolarización del alumnado de origen inmigrante en España: análisis descriptivo y estudio empírico*. Madrid: www.defensordelpueblo.es

Etxeberría, F., Elosegui, K. (2010). Integración del alumnado inmigrante: obstáculos y propuestas/ «The Integration of Inmigrant Schoolchildren: Obstacles and Proposals. *Revista Española de Educación Comparada,* (16), 235-263. Retrieved from https://search.proquest.com/docview/1759993967

European Anti Poverty Network. (2017). *El estado de la pobreza: seguimiento del indicador de riesgo de pobreza y exclusión social en España.*1 de enero de 2014 – 31 de diciembre de 2016[Tabla]. Recuperado de: http://www.eapn.es/estadodepobreza/

European Parliament (1998): Étude sur l´éducation: l´enseignement des immigrés dans l´Union Européene. Luxemburgo

Eurostat Statistics Explained. (2017). Estadísticas de migración y población migrante. Recuperado de: http://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics/es

Fernández, J. (2017). Alumnado inmigrante en la eso: vulnerabilidad pedagógica del sistema educativo, *Educación XX1*, 20(1), 121-140.

Hernández, M. (12 de julio de 2013). El estigma de ser mujer, inmigrante y prostituta. El Diario. Recuperado de: http://www.eldiario.es/desalambre/inmigracion/prostitucion-inmigracion-mujeres-discriminacion-explotacion_sexual_0_152934716.html

Lawrence D. Bobo, & Cybelle Fox. (2003). Race, racism, and discrimination: Bridging problems, methods, and theory in social psychological reserch, Social Psychology Quarterly, 66(4), 319-332. Retrieved from http://www.jstor.org/stable/1519832

Leralta Piñán, O. Politóloga y medidora social. Técnica de Vivienda en la Comisión Española de Ayuda al Refugiado. *Ser inmigrante: «Factor de riesgo» en el acceso a la vivienda.*

M.E.C. (2018): *Datos y cifras*. Madrid: Ministerio de Educación, cultura y deporte.

Malamud, C. (2007). Los problemas sociales de los inmigrantes. Madrid: *Ojos de papel.* Recuperado de: http://www.ojosdepapel.com/Index.aspx?article=2647

Martínez, R., & Lee, M. T. (2004). Inmigración y delincuencia. *Revista Española de Investigación Criminológica: REIC,* (2) Retrieved from http://dialnet.unirioja.es/servlet/oaiart?codigo=2083371

Otero, J. A., Igartua, J. J. & Muñiz, C. (2006). El tratamiento informativo de la inmigración en la prensa y la televisión española. Una aproximación empírica desde la teoría del Framing Global Media Journal, vol., 3., núm., 5. México. *Global media journal ISSN: 2007-2031 globalmedia_enespanol@hotmail.com instituto tecnológico y de estudios superiores de monterrey México.*

Quillian, L. (2006). "New Approaches to Understanding Racial Prejudice and Discrimination". *Annual Review of Sociology,* 32, 299-328.

Roquero, E. (1996): "Asalariados africanos trabajando bajo plástico", en *Sociología del Trabajo,* nueva época, nº 28. Otoño, pp. 3-23.

Sassen, S., 2001. *¿Perdiendo el control? La soberanía en la era de la globalización*. Barcelona: Bellaterra.

Tambini, D. (2001). *Postnactional citizenship. Ethnic and racial studies*, 24(2), 195-217.

VALUES EDUCATION APPROACHES WITH DILEMMAS IN SCHOOLS

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Abstract

Values education is an important topic in the context of schools, because for students, teachers are at the third position for educating them in values after parents and grand-parents. Values education is the active examination of the individual with its environment and its various, partially conflicting values. In order to foster values education in schools in Germany, four approaches using dilemmas are compared in order to identify key commonalities which are central for values education. These approaches are (1) the Konstanz's method of dilemma stories, (2) the Values Discourses, (3) the Values and Knowledge Education Approach, (4) and Dilemma Stories in primary schools. Categories of the qualitative analyses were objectives, target group, didactical design, subject area, and time affordances. Results show commonalities in using dilemmas, the objectives, the didactical procedure, and time affordances. Differences between the approaches comprise the target group, and the subject area. Problems in using these approaches are specifically time restrictions which are necessary to sustainably implement values education and foster the transfer to values-based actions.

Keywords: Values education, dilemmas, schools.

1. Introduction

In the UNICEF-Children Values Monitor, children were asked to evaluate, which persons could educate them best in values. Results show that children firstly named their parents, followed by grand-parents and teachers (UNICEF, 2014). Furthermore, eighty per cent of all students think that teachers are important for their values education. Thus, values education is a central part in school. Furthermore, developments like digitalization, globalization, and migration are topics which go through all social levels throughout the world. In this context, values are of immense importance for people in order to adequately cope with these phenomena, too. Again, values education is necessary.

Values education is the active examination of the individual with its environment and its various, partially conflicting values (Lind, 2011). During personality development, children have to generate and acquire values and attitudes which influence their thinking and acting. In this bi-directional process, in which educators influence children and vice versa, schools have a prominent role. During class, teachers initiate learning activities which are relevant for students' qualification, socialization and individual development. Reflecting on specific issues fosters values education.

In this context, dilemmas are of relevance: a dilemma describes a story about a situation in which a student has to choose between two unpleasant and morally inconsistent alternatives which both are connected to displeasing consequences. Anyhow, students have to decide on one of these alternatives. When cognitively reflecting on such stories, values are addressed.

In schools, dilemmas may be an adequate method in order to foster values education. There are four approaches which use dilemmas for fostering values education in schools: (1) The Konstanz's Method of Dilemma Stories, (2) the Values Discourse, (3) the Values and Knowledge Education Approach (VaKE), and (4) Dilemma Stories in primary schools.

Such approaches seem to have some potential in fostering the reflection about values at school. But one problem that occurs in schools in Germany are time restrictions that often hinder a sustainable implementation into class (Kopp, Wallner, & Mandl, 2017).

2. Objectives

Our main objective is to show commonalities of these four main approaches which use dilemma stories in order to foster values education. In this respect, we analyze the four approaches regarding the categories objectives, target group, didactical design, subject area, and time affordances. Based on these analyses, important commonalities were extracted which were key aspects for fostering values education in schools. Furthermore differences were examined.

3. Methods

We investigated four different approaches which are relevant for values education in schools using dilemmas as main mean. These were (1) the Konstanz's method of dilemma stories, (2) the Values Discourses, (3) the Values and Knowledge Education Approach, (4) and Dilemma Stories in primary schools. We analyzed these approaches qualitatively according to five main dimensions: objectives, target group, didactical design, subject area, and time affordances.

The objectives comprise the main aims of the respective approach and the specific issues the approaches focus on in order to foster values education.

The target group includes the diverse age of students for which the respective approach is useful. As dilemma stories are differently complex, some are more useful for elementary schools, others more for secondary schools, high schools or for university.

The didactical design includes the way the respective approach is implemented in class. There are specific steps necessary to lead students to their task of examining the dilemma story.

The subject area comprises the content in which dilemmas are integrated in order to stimulate values education.

The time affordances include the amount of time that is needed in order to integrate the approach into class.

3.1. Object of investigation: analyses of Konstanz's method of dilemma stories

The Konstanz's Method of Dilemma Stories is based on the theory of moral development of Kohlberg (1964). In order to stimulate the moral development, Kohlberg used dilemma stories and confronted students with arguments which were one step higher than their own moral level.

The *objective* of the Konstanz's Method of Dilemma Stories is to foster values competence specifically regarding cognitive skills, even though, an action-oriented aspect is also partly included (Lind, 2012). Students should become aware of their own moral principles, consider the circumstances and facts of the situation, differentiate the own principles according to importance and adequacy, articulate these principles in a social context, listen to arguments, and use meta-criteria for solving conflicts.

The *target group* comprises all kinds of students starting with primary school and ending with university students. The approach does not pretend a specific target group.

The *didactical design* comprises ten steps. (1) In the beginning, the teacher waits for the students' attention; (2) The teacher presents a semi-real dilemma; (3) The students think silently about the dilemma story, read it, and make notes; (4) The teacher clarifies the perception of the dilemma story; (5) The students give a first vote regarding pro or against the decision of the protagonist of the story; (6) Pro and contra groups were built to discuss their arguments, collect them and complement them with new information; (7) In the plenum pro and contra groups meet each other and discuss their different viewpoints; (8) The class nominates the best contra argument; (9) The students give a second vote regarding pros and cons; (10) The students reflect about their pleasure and their learning success.

The *subject area* is not specified in this approach. The semi-real dilemmas are formulated by the teachers themselves, but the examples which were given indicate ethical or religious topics.

The *time affordances* are not specified in this approach. But according to studies, the approach is implemented not only once, but over a longer period of time (Lind, 2015). Furthermore, it could be assumed that it takes at least one school lesson.

3.2. Object of investigation: analyses of the values discourse

The Values Discourse (Oser, 1992) is again based on the steps of moral development of Kohlberg (1964). The main issue in this approach is to solve conflicts in which moral norms are used and legitimated.

The *objective* of the Values Discourse is to foster moral development within a specific moral level (Oser, 1992). This is possible through comprehension regarding possible consequences of specific actions. Specifically situations in which kids experience negative values, like injustice, are good examples for them to learn positive values like justice (Oser, 2005).

The *target group* comprises specifically teachers which have to learn how to handle dilemmas and conflicts in their class. Values education could only take place when the teacher discusses moral topics in his classroom (Oser, 1992). The joint negotiation of values questions between teachers and students is of main importance.

The *didactical design* for the discussion and solution of the dilemmas comprises four steps (Oser, 1992): First, teachers have to create a roundtable for all students. In a second step, all students are allowed to tell their opinions, independent of whether they express a need, argue with reasons, put the blame on someone, or present solutions. Every participant has to carefully listen to each other; the teacher is the discussion leader and an information carrier. In the third step every participant has to add something constructive for finding a solution and take responsibility for his opinion, meaning he has to justify it. In the fourth step, the dilemma will be solved (Oser, 1992).

The *subject area* is not specified. The Values Discourse Approach is very broadly conceptualized and applicable not only to written dilemmas, but also to general problems which occur in the classroom in daily cooperation.

The *time affordances* are again not specified. Implicitly, the handling with the dilemma takes as much as time until it is solved. This could take one lesson, but also longer.

3.3. Object of investigation: analyses of values and knowledge education approach

In the Values and Knowledge Education Approach, dilemmas are conceptualized in such a way that a protagonist has to choose between two alternatives which are not compatible with each other (Patry, 2007). Choosing one possibility implies always that another important value is hurt. But the students have to choose one alternative.

The *objective* of the Values and Knowledge Education Approach is that students learn to defend their point of view with arguments, evidences and proofs (Patry, 2007).

The *target group* is very heterogeneous. This approach could be applied for primary and secondary school children, for high school students as well as for pre-service teachers (Weinberger, Patry, & Weyringer, 2016).

The *didactical design* of the VaKE comprises ten respectively eleven steps (Patry, Weinberger, Weyringer, & Nussbaumer, 2012, p. 565-566). (1) In the whole class, the dilemma is introduced and the values are named; (2) Students individually decide on an alternative; (3) In small groups, students argue and think about reasons for their opinion; (4) In the whole class, the experiences and arguments or missing information are exchanged; (5) In small groups, students search for information to support their argumentation; (6) In the class, the results are exchanged and examined regarding their elaboration; (7) Students again argue in small groups; (8) The whole class exchanges new information; (9) If necessary, steps 4 to 8 are repeated; (10) In this step, the class finds an end-product or a synthesis; (11) The topic is generalized to diverse further topics which are connected to this dilemma.

The *subject area* is mainly connected to scientific topics which are relevant in STEM subjects.

The *time affordances* comprise at least one school lesson. As the VaKE combines content-specific issues with the respective dilemma, the whole approach seems to need more time than one school lesson, even though, nothing precise is mentioned.

3.4. Object of investigation: analyses of dilemma stories in primary schools

The Dilemma Stories in Primary Schools use stories which are taken from the daily lives of the students in order to identify themselves with the respective situation (Kopp, et al., 2017).

The *objective* of the Dilemma Stories in Primary Schools is to sensitize students for specific values in scientific content areas. Through actively examining the stories and discussing them, diverse possibilities of acting are carved out.

The *target group* comprises students of the 3rd and 4th grade of any primary school, meaning children from 8 to 10 years old.

The *didactical design* for this approach includes six steps (Mandl, Kopp, Niedermeier, & Meixner, 2015): (1) The values discussion is methodical prepared; (2) The starting problem is discussed with the students; (3) Diverse positions and values-based opinions are clarified; (4) The diverse positions and arguments of the students are recorded; (5) In class, adequate possibilities of action are developed; (6) Results are saved.

The *subject area* is attributed to STEM subjects, including the content areas energy, environment, and health.

The *time affordances* comprise at least one school lesson of 45 minutes. But as dilemmas are integrated after students' conducting an experiment, this may last longer. Furthermore, there are several dilemmas conceptualized for the content area which implies a repetition.

4. Results

When we look at the categories of analyses and the four approaches which use dilemma stories for fostering values education, we can detect commonalities and differences.

Regarding **commonalities**, the categories objectives, didactical design, and time affordances are more or less comparable. The main objective of all four approaches is to foster the moral development and to sensitize students for the issue of values with the help of dilemmas. In reflecting on diverse decisions, values education takes place.

Looking at the didactical design, even though the amounts of steps which are used differ from approach to approach, they all have five steps in common: *First*, a dilemma is introduced in class. This could be presented verbally, written or with pictures. Important is that the students realize and identify the dilemma in the story. *Second*, students have to articulate their opinion and exchange the diverse points of view with each other. This could be realized through the whole class or small groups, verbally or written. Different values are exchanged, compared, and discussed. Confrontations with different opinions lead to socio-cognitive conflicts which must be resolved in order to deeper elaborate the problem (Doise & Mugny, 1984). In a *third* step, argumentation is of main relevance. When generating arguments, students have to cognitively engage in critical thinking and reasoning (Andriessen et al., 2003) as well as in socio-cognitive activities of comparing, balancing, and evaluating diverse arguments (Kopp & Mandl, 2011). In a fourth step, the reflection about values is of importance. Using reflection, it is possible to correct cognitive inconsistencies in our attitudes as well as mistakes in our problem solving (Mezirow, 1990). The *fifth* step includes the final decision of the student which is based on factual information and values. Justifying the decision is of main importance in this step.

Regarding time restrictions, all approaches need at minimum one school lesson of 45 minutes, but usually should be conceptualized with at least two school hours. Furthermore, the approach should be repeated during the year.

Differences include specifically the target groups and subject areas. Looking at *target groups*, there are some approaches which are explicitly conceptualized for younger children (e.g. Dilemma Stories in Primary Schools), while others are adaptable to students of every age (e. g. Konstanz's Method of Dilemma Stories; VaKE), and others are also explicitly designed for teachers (e. g. Values Discourse).

The subject areas differ as well. While Dilemma Stories in Primary Schools and the VaKE Approach are specifically conceptualized for STEM subjects, in whom scientific topics are connected to values, the Konstanz's Approach of Dilemma Discussion as well as the Values Discourse Approach are not connected to a specific subject or content. They could be implemented more broadly.

5. Conclusions

Summarizing and concluding, it seems that dilemmas are an adequate method in these four diverse approaches in order to stimulate the reflection on values. Studies which were made to evaluate their effectiveness show positive results (e. g. Kopp, et al., 2017; Oser, 1992; Weinberger et al., 2016).

Even though, values education is obligatory for all schools in Germany, this is often not the case. Problems occur regarding curricular demands which have to be fulfilled. Thus, often time is not enough for implementing adequate approaches for values education. Specifically, such approaches are not effective when used once. They need continuous integration into class to sustainably change attitudes and beliefs. Furthermore, the education of teachers in order to learn how to integrate values education into their daily practice is necessary in this context.

References

Andriessen, J., Baker, M., & Suthers, D. (2003). Argumentation, computer support, and the educational context of confronting cognition. In J. Andriessen, M. Baker, & D. Suthers (Eds.), *Arguing to learn: Confronting cognitions in computer-supported collaborative learning environments* (pp. 1-25). Dordrecht: Kluwer.
Doise, W. & Mugny, W. (1984). *The social development of intellect*. Oxford: Pergamon.

Kohlberg, L. (1964). Development of moral character and moral ideology. *Review of child development research*, *1*, 381-431.

Kopp, B. & Mandl, H. (2011). Fostering argument justification using collaboration scripts and content schemes. *Learning and Instruction, 21*(5), 636-649.

Kopp, B., Wallner, K., & Mandl, H. (2017). Impulses and dilemma stories for values education in STEM context in elementary schools, *Journal of Modern Education Review, 7*(2), 91-105.

Lind, G. (2011). Moralerziehung. In: E. Zierer & K. Kiel (Eds.). *Basiswissen Unterrichtsgestaltung* (pp. 39–50). Baltmannsweiler: Schneider.

Lind, G. (2012). Die Methode der Dilemmadiskussion. In F. Brüggen, W. Sander, & Ch. Igelbrink (Eds.), *Basistexte zur Urteilsbildung* (Urteils-Bildung, Bd. 2). Münster: LITVerlag.

Lind, G. (2015). Favorable learning environments for moral competence development. A multiple intervention study with 3.000 students in a higher education context. *International Journal of University Teaching and Faculty Development, No. 4, Issue 4.* Retrieved under https://www.novapublishers.com/catalog/product_info.php?products_id=53411 [28.04.2017].

Mandl, H., Kopp, B., Niedermeier, S., & Meixner, M. (2015). *Leitfaden „Naturwissenschaften, Technik und Werte".* München: Siemens-Stiftung.

Mezirow, J. (1990). How critical reflection triggers transformative learning. *Fostering Critical Reflection in Adulthood, 1*(20).

Oser, F. (1992). Morality in professional action: a discourse approach for teaching. In F. K. Oser, A. Dick, & J.-L. Patry (Eds.), *Effective and responsible teaching* (pp. 109-125). San Francisco: Jossey-Bass.

Oser, F. (2005). Negatives Wissen und Moral. *Zeitschrift für Pädagogik, 49*, 171-181.

Patry, J.-L. (2007). *VaKE*-Introduction and Theoretical Background. In K. Tirri (Ed.), *Values and Foundations in Gifted Education* (pp. 157-169). Bern: Peter Lang.

Patry, J.-L., Weinberger, A., Weyringer, S., & Nussbaumer, M. (2012). Combining values and knowledge education. In B. J. Irby, G. Brown, R. Lara-Alecio, & S. Jackson (Eds.), *The Handbook of Educational Theories* (S. 563-577). Charlotte: Information Age Publishing.

UNICEF (2014). *Geolino-UNICEF-Kinderwertemonitor 2014.* Verfügbar unter https://www.unicef.de/blob/56990/a121cfd7c7acbdc2f4b97cbcdf0cc716/geolino-unicef-kinderwertemonitor-2014-data.pdf [10.04.2017].

Weinberger, A., Patry, J.-L., & Weyringer, S. (2016). Improving professional practice through practice-based research: VaKE (Values and Knowledge education) in university-based teacher education. *Vocations and Learning, 9*(1), 63-84.

DEVELOPMENT OF APPLICATION FOR MATERNAL LANGUAGE IMPROVEMENT FOR FUNCTIONAL ILLITERATES BASED ON THE THINKING DESIGN APPROACH

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Abstract

In this paper we highlight aspects of the research about the elaboration of an application prototype aimed at functional illiterates, based on the methodology of Design Thinking. It includes: definition of a problem, presentation of a solution, prototyping, testing, and conceptualization about this process. At the present moment of the research, we are in the prototyping phase, modeling the concepts of interactive activities and interfaces of the application. The expectation is that the subjects, who constitute the target audience, even presenting different digital fluencies, with greater or lesser ability, they can perform gamified activities in mobile interfaces, use the proposed application, both to broaden their conditions of interpretation and written understanding of verbal codes. This research has a social purpose of inclusion through the application, as social good. It addresses educational design issues in order to improve the verbal signs domain of people with low schooling. Recent research indicates that the reading deficits of the Brazilian population increasingly reinforce social, cultural, work, productivity and direct inequalities in the possibilities of new learning, which may impact different fields (Conceição, 2016). When analyzed in a school setting, these shortcomings increase difficulties in learning content from critical subjects and also present challenges on how to prepare citizens to seek employability and their productive sustainability in global knowledge societies (Mauch et al, 2016). Functional illiteracy has gained more evidence in study circles, which aim to raise awareness of active methodologies mediated by digital technologies, which define more social distances between individuals with low literacy. However, when applicable solutions are offered they can increase the possibilities of inclusion, new practices of communication, reasoning, production and use of different competences. According to Indicator of Functional Illiteracy in Brazil there are approximately 14 million absolute illiterates and a little more than 35 million functional illiterates. In this way, there are strong implications in the daily life of these individuals, which prevent them from performing ordinary actions, such as picking up a bus, paying a bill, recognizing addresses for their mobility, making simple calculations on purchases, controlling the frequency and dose of medications etc. To transform illiterate individuals into proficient literates, it is necessary to develop some capacities in the design of this application: interpretation of different texts, making inferences, elaborating syntheses, associating rules with particular cases, recognizing and working arguments, understanding the main idea of the story and different visions on the same text, among others.

Keywords: Functional illiteracy, cognition, learning, mobile learning, active methodologies.

1. Introduction

This paper is the result of the first actions developed in the Study Group " Hybrid education, methodologies and digital learning objects in mobility environments which is part of the master's degree in education and new technologies – from a Brazilian private higher education institution – UNINTER- . Among its main actions, in addition to forming researchers at Masters level and scientific initiation, are: discuss, deepen and apply hybrid methodologies, aiming at the development of learning objects, which have a function of social inclusion. In our research, we seek to deepen the knowledge about hybrid practices and methodologies, with digital learning objects and mobile technology.

In the specific case presented in this article, it seeks to deepen the knowledge about the application development for mobile devices, mainly cell phones, directed to functional illiterates, whose

main difficulty is in reading and interpreting texts. The reflection and practice in this study are based on digital technologies, specifically in applications, according to which functional illiterates use smart mobile phones and social networks such as Facebook, WhatsApp,Messenger,Instagram, that promote a series of experiences in different contexts which demand varied forms of reading, especially those related to audio-visual. However, our target audience show difficulty in interpreting linguistic, that is–written words, phrases and short texts (Conceição, 2016).

2. Objectives

Our research suggests that, there are some points that should be observed when designing mobile applications for language learning purposes (Garcia, 2016):

1) learning design for the enchantment, empathy and emotional memories from the music, especially: the design present on personal and custom mobile platforms is initially challenged with regards to proposing interfaces that cause fascination for learning.

2) links to real situations: present activities that bring effectiveness in learning and that can be inspired and function in real life communications.

3) connections beyond the mobile interface: the domains of the learning proposals are not necessarily controllable on the results that can be achieved from the educational Design.

In fact, apps of this nature seek to transform into sources of inputs, in which autonomy and self regulation can create new connections beyond the interfaces such as:

a) Sustainable design: one that promotes conditions for what needs to be learned to become more withheld, applied, practiced, unfolded sinestheticaly, through the use of strategies that lead to learning activity: reflection, debate, development of small tasks and challenges.

b) Learning design experiences: the design of interfaces for mobiles should focus on creating experiences that lead to learning; This means recreating situations that encompass components of the language structure, vocabulary and linguistic interpersonal communication that can and will fit into narratives, that seek immersion and involvement, at the same way that can amuse and teach.

c) Intuitive Design – which speaks for itself and does not demand explanations, leading the learner to improvements in learning.

d) Design by Touch – which works on changing interfaces by Touch, supported by the concept of intuitive navigation on interface.

e) Design with emphasis on the human senses - encompasses visual, auditory, kinesthetic (feelings processing, emotions) aspects.

f) Micro-content Design –fragmented content for composing a learning narrative, which appeals to the immediate application in contexts also reduced, but cohesive, communicative and pragmatic.

However, for people who know how to read little, they need a reinforcement in auditory resources on design activities, or something that can support non-verbal code-writing.

3. Discussion

Recent research results point out that learning difficulties strengthen more social inequalities with political, cultural implications. These shortcomings emphasize, in a school environment, difficulties in dealing with critical subjects, but also to prepare people for the challenges of sustainability and employability in global knowledge Societies (Mauch et al, 2016).

Functional illiteracy is a thematic that deserves more evidence in the studies circles of learning experiences, and practices, which imply more awareness about methodologies mediated by technologies in the continuous teacher training in this area that concrete solutions are developed for such visible problems and that they compromise the social, personal and technological development of the nations.

The importance of this practice study is to develop a more consistent theoretical support on the Concept of informal learning and teaching, as well as the application of design processes and consequences, including acceptance, concepts of gamification, immersion and usability. It highlights the motivations, the theoretical assumptions, as well as the definitions and choices that support the development of these application as an aid for the mitigation of functional illiteracy in terms of domains for the acquisition of spoken and written verbal language.

This means that it is necessary to focus on functional illiteracy as a way to minimize inequalities with respect to rights and citizenship. Knowing how to read, but not being able to interpret what is read, is the main problem faced by a functional illiterate who has immeasurable difficulties to become productive in a society that demands high knowledge of technology, besides not being able to correspond to simple tasks, which require the minimum capacity of textual interpretation and production. It is necessary to point out urgent and more effective solutions to include such a group in contemporary society.

According to Lima et al. (2016), in research conducted with persons aged between 15 and 64 years, 27% of Brazilians were identified by INAF as functional illiterates. This data shows a serious problem, because these people are affected by different forms of productivity at work, they were fated to stop life improvement processes delay several sectors of social development, as well as their inclusion and personal satisfaction.

The ability to read and textual interpretation, when it falls short of the desired, it limits skills, highlighted in several studies, among them the ability to produce and understand written messages with some degree of complexity, in order to promote individuals to build an adequate representation of the world and the place that occupy and develop (García and Martin Codero, 1987).

On the other hand, most of these people categorized as illiterate Functional, are also active users of technologies, such as smart phones and Mobile devices, but that somehow have their limited access by not mastered reading and writing beyond a rudimentary level. In Brazil, the research published by We are Social (2017) demonstrates that 89% of the Brazilian adult population uses the cell phone being that 62% are smartphones. This data demonstrates the potential to use this device for learning, enabling the development of applications that explore interactively literacy, mitigating functional illiteracy.

Functional illiterates, depending on the massive use of digital mobile devices and interactive communication, can:

• Use personal platforms for activities aiming to increase reading capacity and textual interpretation;

• Have motivation to use devices for your self-learning with self-esteem and the regard of respect for oneself:

• There are important goals to be achieved in order to diminish the number of functional illiterates, aiming to become proficient in their own language, in order to get rid of these difficulties around reading and writing, which involve: Interpretation of various texts, conducting inferences, elaborating synthesis, associating rules with particular cases, recognizing and working arguments, understanding the moral of the story and several visions about the same text, among other aspects, in order to become proficient (Lima et al, 2016), in addition to broadening their forms of participation in social media by the domain of verbal languages (Conceição, 2016).

We have verified from the outset that the role in learning is still a developing process and is increasing, tends to draw from the mobile digital objects of learning, in the form of applications, more responsible possibilities for those who it learns so much in combined environments, so-called hybrids in self-learning and informal environments, where learning objects are accessible for access to different forms of knowledge. However, this is an aspect that must be deepened, including tasks that demand, critical thinking, production and construction activities in a foreign language.

Through the analysis of criteria for the construction of learning, it was observed that the issue of leadership in learning is accentuated to the extent that they offered activities, observing the interfaces of interaction, content and interest, high degree of communication with the apprentice, active processes of data insertion by users on these platforms of learning and guidance of experiences to generate future performances with the mother language.

3.1. Design thinking phases

We are working of a approach of Design thinking that has 6 phases (Filatro and Cavalcanti, 2017).

1. Understand and detect needs
2. Observe the problem
3. Define the problem that will be addressed
4. Generate ideas
5. Make a prototype
6. Validate / test

Our research is in the phase 5: to make a prototype. After researching the axis that would link the functional illiterates to the application, arousing their interest, it was decided to focus the music. For music awakens an imaginary affective and generates surroundings, as well as encompassing genres and ages. Thus, the prototype phase of design thinking covers prototype development. For which we use the following assumptions and actions:

Assumption:

1. To explore the life narrative of users in the age group in terms of knowing the difficulties that illiteracy causes.

2. Focus Music as the axis of the application's interactive proposal: the music is in everyone's universe and the lyrics of the songs are known, establishing an affective bond between people.

3.2. Actions for prototyping

The educational design products for mobile applications must also to provide processes at the same time more autonomous and individualized, requiring attention and objectivity in the activities, as well as more collective and spontaneous processes, which request the opening of perspectives on the sources and the contents that are learned.

• Explore knowledge application of the domain, developing activities so that the user can test their knowledge of writing and reading from the stimulus of the lyrics of known and sung music.

• Raise the different fluences: Digital; Codes; verbal and; non-verbal

• Deciphering the emergence of emotion through music and contributing to the affective and cognitive learning process.

• Use gamification experience

• Define gamification phases - from the simplest to the most complex

• Work the process evaluation process

• Working the navigation interface from the choice of musical genres combined with difficulty levels (phases)

• Develop an intuitive navigation, but one that is related to the complexities

• Research what is popular to reach the musical and linguistic interest of this audience.

4. Final Considerations

The present study, besides having an empirical part, defined by the approach of design thinking, that guides the different phases of an application's production, leads to the refection that combines theoretical deepening with practices that should insure the realization of an end product for the inclusion Social.

We think about social inclusion before we think about technology, but we were observing technology as a bridge that unites studies that must respond to problems in society. Thus, the design of activities focused on the target audience, which does not have the privilege of writing or reading, should navigate, be intuitive and lead to the learning process, relegating what already dominates and with self steem.

Music is the guiding thread of this interaction and it will rescue emotional issues and affective memory, moving through all age groups, creating differentials based on the digital fluency of these people.

References

Cavalcanti, Carolina C.; Filatro, Andrea. Design Thinking – na educação presencial, a distância e corporativa. São Paulo: Editora Saraiva, 2017.

Conceição, L. S. E. (2016) Baixo letramento e novas mídias digitais: A experiência de indivíduos com baixo letramento em redes sociais e comunicadores instantâneos. Dissertação de Mestrado, PUC-RJ. Rio de Janeiro, RJ.

Garcia, Marilene S. S (2016). Design de Aplicativos Mobile para a Aprendizagem de Língua. EaD Em FOCO, 6 (1). Retrieved from doi: http://dx.doi.org/10.18264/eadf.v6i1.371.

Garcia Madruga, J. A & Martin Cordero, J. I. (1987) Aprendizaje, Compreension y Retención de textos. Madrid, UNED.

Lima, A.; Ribeiro, V. M.; Catelli Jr R. (2016) Indicador de alfabetismo funcional – INAF Estudo especial sobre alfabetismo e mundo do trabalho. Ação Educativa e Instituto Paulo Montenegro,. Retrieved from:http://acaoeducativa.org.br/wpcontent/uploads/2016/09/INAFEstudosEspeciais_2016_Letramento_e_Mundo_do_Trabalho.pdf.

Mauch, W.; Vieira, D.; Barbieri, C.; Moreno (2016). Terceiro relatório global sobre aprendizagem e educação de adultos. Brasília : UNESCORetrieved from: http://unesdoc.unesco.org/images/0024/002470/247056por.pdf. Acesso em 18/05/2018.

Prensky, Marc.: (2001) Digital Natives Digital Immigrants. In: PRENSKY, Marc. On the Horizon. NCB University Press, Vol. 9 No. 5, October .

WE ARE SOCIAL. (2017) Digital Yearbook: análise Brasil. 2017, Brasil. Retrieved from:http://fullpack.net/blog2/2017-digital-yearbook-analise-brasil/

FACTOR STRUCTURE OF THE SOCIAL COPING QUESTIONNAIRE IN CZECH EDUCATIONAL ENVIRONMENT

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Abstract

Questionnaires are the worlds most widely used methods of quantitative research in the social sciences. They often focus on tracking abstract and intricately operationalised constructs. This is why greater emphasis is placed on their quality and efficiency. We repeatedly test their psychometric properties and, above all, focus on their validity and reliability. To do so, we use statistical procedures such as exploration factor analysis and reliability coefficients. This study focuses on exploring of factor structure of The Social Coping Questionnaire by Swiatek (2007) in the Czech educational context, specifically in the field of educating gifted pupils. This tool exists in several versions and has been tested on various samples of gifted pupils around the world. However, the results of factor analysis are not uniform. We decided to test this tool on a sample of 235 gifted pupils in the Czech Republic. We focused on the ISCED2 level of education. Our factor analysis results are not entirely consistent with the declared structure of the aplied version of the tool. The results can be influenced by translation of the questionnaire into the Czech language and its application to a specific population of gifted pupils in the region. We focus analytically on different versions of the questionnaire factor structure. At the end of the study, the results are discussed and general recommendations are made for further work with the tool in the Czech context.

Keywords: Giftedness, social coping, questionnaire, construct validity, factor analysis.

1. Introduction

The aim of this study is to present the results of the application of The Social Coping Questionnaire (Swiatek, 2007) in the Czech educational context in terms of reliability and construct validity of the tool. The tool was originally created in 1995 and is designed to diagnose social coping strategies among gifted pupils in (pre)adolescent age. It is based on the theory that gifted individuals can apply different social strategies to fit in their social group of peers (typically inclusive school classes). In adolescent age, individuals tend to conform to peers and feel socially excluded from their community if their perceptions are different. For gifted pupils, it can lead to denial of giftedness, its ridiculing, or other strategies that are negative in terms of optimal giftedness development. At present, when inclusion is a very important topic of Czech pedagogy, such a tool could contribute to research in this field. Its validated application could be used directly in pedagogical practice and could help teachers and school psychologists to optimize working with gifted pupils. It is important to test the Social Coping Questionnaire in the Czech environment to assess its psychometric characteristics (in our case reliability and construct validity) and to be able to work with it adequately. It is not possible to use the tool in the original version. As known from previous studies, its reliability is rather low and construct validity is not constant.

This article is linked to a study focusing on social coping strategies among gifted boys and girls. However, both studies have their individual focus and, given the very limited extent, they have to be separated. While this study is of a purely methodological nature and devotes itself to the validation of the tool, the second study presents practically usable findings that have been achieved through the application of the tool.

2. Design

The study aims to evaluate the reliability and construct validity of the The Social Coping Questionnaire (Swiatek, 2007) in the Czech educational context and its aim is to propose a factor solution

based on original tool which can be used as a base in following researches in the Czech field. Rudasill (2007) briefly introduces 7 versions of the questionnaire that emerged during its applications in years 1995-2005 on various samples of gifted adolescents: Swiatek (1995), Swiatek and Dorr (1998), Swiatek (2001), Sviatek (2002), Chan (2003, 2004, 2005). Factor analysis applied to different versions of the tool uncovered 4 to 7 factors whose names differ in different studies: Denial of Giftedness, Popularity / Conformity (later divided into 2 separate factors), Peer Acceptance, Actvity Level, Hiding Giftedness, Using Humor, Cnformity, Helping Others, Emphasis on Popularity, Attempting Avoidance, Discounting Popularity, Valuing Peer Acceptance, Prizing Conformity, Activity Involvement. Presented versions of the tool ranged from 17 to 35 items. The tool can therefore be considered as inconsistent from the view of construct validity, but also reliability of its factors, which often does not reach the required Cronbach's alpha 0.7 (Rudasill, 2007, p. 358).

In this study, we draw on the version of the questionnaire by Swiatek (2007), which has 34 items. Her study was conducted on 339 respondents, who were intentionally selected and pre-diagnosed gifted adolescents. The factor solution explained 42% of variance and the author identified 5 factors:

1. Denying Giftedness (DG, 8 items, the strongest factor, Cronbach´s alpha = 0,77),
2. Social Interaction (SI, 8 items, Cronbach´s alpha = 0,69),
3. Humor (H, 5 items, Cronbach´s alpha = 0,68),
4. Conformity (C, 6 items, Cronbach´s alpha = 0,66),
5. Peer Acceptance (PA, 7 items, the weakest factor, Cronbach´s alpha = 0,61).

However, our study is conducted in a different context, so it can not be expected that the results will be entirely comparable. In addition to the translation into the Czech language, which was implemented primarily with respect to the clarity of the items for Czech pupils, we have shortened the range of answers from 7point scale to 4 points due to the planned application of the tool to pupils from ISCED2 (10-15 years). According to our experience gained on the same target group, it seemed appropriate to simplify the scale because pupils used the extreme values very rarely. We also decided not to use the middle value of the scale, because the pupils tend to choose it. (Kočvarová, Machů, 2017).

Because of relatively small sample of respondents (n = 235) we applied the exploratory factor analysis (EFA) to assess the construct validity. For comparison, we applied oblique rotation as well as orthogonal Varimax rotation. The results of the analysis are presented in the following chapter.

3. Findings

First, we present a comparison of our findings with the results of Swiatek (2007). Basic parameters (KMO = 0.653, statistically significant Chi-square test) allow EFA to be used. If we apply the classic version of EFA (Principal components, Varimax rotation) and do not set the required number of factors, SPSS will offer 12 factors that explain a total of 63% of variability. Such a solution, however, is considered impractical because it shatters social coping strategies on a large number of difficultly interpretable dimensions. If we determine the number of factors to 5 (according to Swiatek, 2007), we get the solution shown in the following table.

Table 1. Rotated component matrix (solution 1).

Questionnaire items, their original order number and factor identity	Components					Communalities
	DG	SI	H	C	PA	
I1. DG. I don´t think that I am gifted.	0,798					0,674
I2. DG. People think I am gifted, but they are mistaken.	0,725					0,562
I3. DG. I am not gifted, I am just lucky in school.	0,698					0,552
I4. DG. As I get older and academic work gets more difficult, people will stop seeing me as gifted.	0,687					0,483
I6. DG. There are many people who are more gifted than I am.	0,664					0,472
I5. DG. Most of the success I experience are due to luck.	0,632					0,474
I8. DG. I don´t tell people that I am gifted.	0,491		-0,370			0,398

I12. SI. I explain course material to other students when they don´t understand it.		0,764				0,600
I14. SI. I use what I know to help others.		0,687				0,529
I10. SI. I spend a lot of time on extracurricular activities.		0,520	0,312			0,383
I15. SI. People come to me for help with their homework.		0,518				0,375
I13. SI. I keep myself quite busy most of the time.		0,465			-0,330	0,350
I11. SI. Because of all my activities, I don´t have time to worry about whether or not I am popular.		0,426				0,261
I9. SI. I find friends who have interests similar to mine by getting involved in extracurricular activities.						0,138
I31. PV. I prefer doing things alone over doing things with other people.						0,132
I19. H. People think of me as a class clown.			0,701			0,517
I18. H. I am good at making people laugh.			0,622			0,498
I17. H. I tell a lot of jokes in school.			0,585			0,459
I24. C. It doesn´t matter what other people think of me.			-0,381	0,344		0,269
I27. C. I try to get involved in sports so people don´t think of me as a „geek“.			0,360	0,353	-0,330	0,376
I25. C. I try to look similar to other students.				0,718		0,568
I23. C. I try to act very much like other students act.				0,690		0,541
I22. C. I don´t worry about my popularity.	-0,359			0,409		0,331
I16. SI. I spend part of my time in group study sessions.				0,325		0,203
I26. C. Being popular is not important in the long run.				0,314		0,234
I20. H. Most people see me as serious.						0,150
I33. PA. I try not to tell people my test grades.						0,179
I34. PA. I hide my giftedness from other students.					-0,552	0,336
I32. PA. If I were not gifted, people wouldn´t like me any more or less than they do now.					0,511	0,376
I29. PA. I would fit in better if I were not gifted.					0,469	0,268
I28. PA. Being gifted doesn´t hurt my popularity.					0,411	0,267
I21. H. I don´t like to give the apperance of being studious.					-0,375	0,264
I7. DG. I try not to be so successful at the things I do.					-0,301	0,273
I30. PA. Other students do not like me any less because I am gifted.						0,077
Variance explained (%)	**11,4**	**7,7**	**6,5**	**6,2**	**5,2**	
Reliability	**0,82**	**0,63**	**0,37**	**0,43**	**0,04**	

Note: Rotation converged in 13 iterations. Factor loadings under 0,3 are not displayed in the table.

By comparing our factor solution, it appears in many ways similar to that presented by Swiatek (2007). 26 of 34 items fit into the originally defined questionnaire factors. 3 out of 8 non-aligned items are associated with other factors, 5 items don´t fall into any of the factors (all have factor loadings below 0.3). Items have low communality in most cases. As for the reverse items of the questionnaire (in the original version I20, I22, I24, I26, I29, I31, I33, I34), we have the highest negative factor loadings in I7, I21, I24, I34. This can be attributed to both translation and application of the tool in a new context, where some of its items are perceived differently by respondents. We believe that the instability of reverse items also causes very low reliability, especially in the case of PA factor. The factor solution explains a total of 37% variance, in the case of Swiatek (2007) it was 42%.

In the case of oblique rotation, the results are significantly different compared to the Swiatek structure, only 18 out of 34 items fit into the original factor structure. Most non-matching items are then included in other factors, which is logical because it is a different type of rotation. This solution can not be presented due to a limited text range.

Secondly, we present a proposal for a factor solution that, in our opinion, seems appropriate for further testing of the instrument in the Czech context.

Table 2. Rotated component matrix (solution 2).

Questionnaire items, their original order number and factor identity	Compoents					Communalities
	DG	SI	H	C	NC	
I1. DG. I don´t think that I am gifted.	0,809					0,682
I2. DG. People think I am gifted, but they are mistaken.	0,743					0,581
I4. DG. As I get older and academic work gets more difficult, people will stop seeing me as gifted.	0,712					0,529
I3. DG. I am not gifted, I am just lucky in school.	0,698					0,558
I6. DG. There are many people who are more gifted than I am.	0,687					0,509
I5. DG. Most of the success I experience are due to luck.	0,633					0,482
I8. DG. I don´t tell people that I am gifted.	0,507		-0,343			0,384
I12. SI. I explain course material to other students when they don´t understand it.		0,776				0,618
I14. SI. I use what I know to help others.		0,702				0,536
I15. SI. People come to me for help with their homework.		0,551				0,419
I13. SI. I keep myself quite busy most of the time.		0,518				0,312
I10. SI. I spend a lot of time on extracurricular activities.		0,504	0,348			0,390
I11. SI. Because of all my activities, I don´t have time to worry about whether or not I am popular.		0,498				0,322
I19. H. People think of me as a class clown.			0,786			0,648
I17. H. I tell a lot of jokes in school.			0,730			0,588
I18. H. I am good at making people laugh.			0,634			0,536
I25. C. I try to look similar to other students.				0,817		0,717
I23. C. I try to act very much like other students act.				0,783		0,685
I27. C. I try to get involved in sports so people don´t think of me as a „geek“.				0,519		0,357

I26. C. Being popular is not important in the long run.					0,753	0,584
I24. C. It doesn´t matter what other people think of me.					0,674	0,486
I22. C. I don´t worry about my popularity.					0,611	0,432
Variance explained (%)	16,1	10,5	9,4	8,4	7,3	
Reliability	0,82	0,63	0,67	0,58	0,56	

Note: Rotation converged in 6 iterations. Factor loadings under 0,3 are not displayed in the table.

This solution keeps 22 of 34 items in 5 factors. The three factors are the same as in the original Swiatek´s solution (DG, SI, H). Factor C (Conformity) split into 2 parts, namely C (Conformity) and NC (Nonconformity). Factor reliability has increased slightly, but is still below acceptable limits. This version of the tool should therefore be considered as working and suitable for further refinement by items that increase the reliability of the individual factors. Total variance explained is 52 %.

4. Discussion and conclusion

The limit of this study is the application of the tool to a small available sample of gifted pupils. In the Czech Republic, the population of diagnosed gifted pupils is small and difficult to access. The quality and size of the sample is then reflected in the analytical methods used, where it is not possible to apply confirmation factor analysis and to generalize our results.

In his study, Rudasill (2007) concludes that gifted adolescents should not be considered a homogeneous group but need to be differentiated in terms of age and gender because these variables have a major impact in assessing the structure of the tool. Because of the limited number of respondents in our study, we could not realize separate EFA for different gender or age groups, although we realize that this could have a major impact on the results. We recommend taking this breakdown into account when working with the tool. Because its structure is still inconsistent and the individual factors have mostly low reliability, it seems appropriate to work with the individual tool items only, regardless of their predicted factor identity, or, for comparisons with other studies, to hold the distribution of the items they apply. Only the strongest factor (DG) seems to be valid and reliable and can be used independently or in a combination with other tools. In Czech educational environment it seems to be compatible with the tool KLIT (Classroom Climate Questionnaire by Lašek), especially with its factor Motivation towards negative school performance.

References

Kočvarová, I., & Machů, E. (2017). Sklony ke konformitě jako potenciální sociální limit rozvoje nadání žáků [Inclinations to Conformity as a Potential Social Limit of Giftedness Development]. Sociální pedagogika/Social Education, 5(1), 63–75.

Lašek, J. Klima školní třídy a možnosti jeho měření. Hradec Králové: Katedra pedagogiky a psychologie Pedagogické fakulty Univerzity Hradec Králové. Available from: http://www.prevence-praha.cz/ke-stazeni/klima-skoly-a-tridy/10-socilnklimaklitccqlaek

Rudasill, K. M. (2007). The Social Coping Questionnaire: An Examination of Its Structure with an American Sample of Gifted Adolescents. Journal for The Education of The Gifted, 30, 3, 353 – 371.

Swiatek, M. A. (2007). Construct Validity of the Social Coping Questionnaire. Journal of the Educatioon of the Gifted, 30, 4, 427-449.

LONG-TERM EFFECTS OF COMPUTER-ASSISTED INSTRUCTION

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Abstract

Research into the long-term effects of computer-assisted instruction (CAI) has demonstrated that, while learning outcomes are positively impacted in the short-term, gains can diminish with time. As CAI is increasingly playing a role in the classroom, it is necessary for research to demonstrate that this technology is placing young students on a positive academic trajectory. The current longitudinal study explored the lasting effect of a CAI program on young learners' literacy skills. South Carolina elementary school students ($N = 1,704$) receiving a CAI program were followed through kindergarten and first grade during the 2015-2016 and the 2016-2017 school years. Students were assessed at the middle and end of the first grade school year using the Developmental Reading Assessment (DRA). Scores of students who received traditional, teacher-directed classroom instruction and not the CAI program were compared to scores of students who used the CAI program for one year (only during kindergarten) or for two years (in kindergarten and first grade). A year after students stopped using the program, students who used the CAI program for one year (only during kindergarten) scored significantly higher than students who did not use the CAI program, indicating a salient and persistent effect of CAI. Additionally, evidence of a dosage effect was found while examining the scores of students who used the CAI program for two years: While all students who used the CAI program significantly outperformed the control, the largest effects were found for students with high CAI usage. This finding extends prior research which had found that increased use of CAI could lead to better results within a single school year. Given the evidence found for both a compounding effect and a persistent benefit, this study supports the sustained use and early implementation of CAI.

Keywords: Computer-assisted instruction (CAI), literacy, early childhood.

1. Introduction

Recent innovations in technology and increases in federal funding for education have led to dramatic increases in the tools available for teachers and students (Kena, et al., 2016). Students are learning with tablets (Neumann & Neumann, 2014), digital storybooks (Verhallen & Bus, 2010), and smart whiteboards (Smith, Higgins, Wall, & Miller, 2005), and the curriculum they are learning can itself be the product of technology. The concept of computer-assisted instruction (CAI) is not a new idea, but it is one that is increasingly relevant. As technology has developed, CAI has moved from theory and initial pilot studies (Hansen, 1968) to widespread implementation (Tamim, 2011). CAI presents students with different forms of interactive and instructional educational media. It allows for individualized learning; unlike traditional large group instruction, individual students will be presented appropriate content and provided meaningful feedback (Jethro, Grace, & Thomas, 2012). By individualizing curriculum CAI increases students' flexibility, interactivity, and engagement. Research has demonstrated that CAI has benefits to young students' math (Aunio & Niemivirta, 2010) and literacy skills (Saine, Lerkkanen, Ahonen, Tolvanen, & Lyytinen, 2010). When implemented with fidelity, CAI technology has been found to be effective for all populations, with specific benefits for young learners (National Mathematics Advisory Panel, 2008).

Early research into CAI found the approach to be an effective, if occasionally inefficient, means of increasing learning outcomes (Kulik & Kulik, 1991; Levin, 1987). In the age before the omnipresent personal computer, studies reliably demonstrated that CAI interventions increased reading and math achievement. However, the same body of literature pointed out technical issues with implementation and that comparable gains could be had with conventional interventions at lower costs (Levin, Glass, & Meister, 1987; Suppes & Morningstar, 1969). Efficiency has improved with time. Recent literature has indicated that CAI may now be a more effective tool than traditional interventions (Chambers, et al., 2011). A study comparing reading outcomes for one-to-one tutoring and CAI found that schools that used CAI curriculum could provide more students with the extra assistance they required. The structural

benefits of CAI can ensure each student spends more time in class successfully engaging with the material (Schoppek & Tulis, 2010).

Longitudinal research has explored the longevity of CAI's impact on literacy skills (Ragosta, 1982; Suggate, 2016). Globally, studies have offered support for the relative salience of CAI on basic linguistic skills, independent of the language being taught (Fälth, Gustafson, Tjus, & Svensson, 2013). At-risk students using a CAI curriculum, observed through first and second grade, demonstrated marked improvement in literacy skills to the point of achieving parity with comparison students at the end of the second grade (Saine, 2010). Additionally, beneficial effects of CAI curriculum on literacy skills of first grade students have been observed months from the original intervention (Ecalle, Magnan, & Calmus, 2009). However, while strong or moderate effects can be found immediately after CAI interventions, these effects diminish with time, fading to small in less than a year (Suggate, 2016). Notably, effects of CAI interventions were shorter lived for lower grades, yet previous literature has suggested that early intervention plays an important role in ensuring future academic success (Gray, Goldsworthy, May, & Sirinides, 2017). Further research is required to ensure that any CAI curriculum intended for early learners has a salient effect.

Longitudinal research into CAI has yet to reach a consensus on the potential for a dosage effect. For a broad range of literacy interventions, including more traditional approaches, increased levels of exposure to a given intervention can lead to increased benefits for students (Ramey & Ramey, 2007). Students receiving a high dose of a literacy intervention will tend to show greater gains in literacy skills than students receiving a lower dosage in the same time-period (Piasta, Justice, McGinty, & Kaderavek, 2012). Non-longitudinal research has demonstrated that students with high usage of a CAI curriculum can see greater benefits in literacy (Shamir, Feehan, & Yoder, 2017a) and math (Shamir, Feehan, & Yoder, 2017b) skills compared to students with lower usage of the same curriculum. Early research exploring this phenomenon specifically with CAI offered some support for a compounding benefit over multiple years; primary school students were followed over three consecutive years, by the end of which students receiving CAI instruction dramatically outperformed control students (Boone & Higgins, 1993). However, a recent meta-analysis into the comparative benefits of various approaches to vocabulary interventions, including CAI approaches, found no evidence of a dosage effect (Marulis & Neuman, 2010). Further research is necessary to assess whether students benefit from increased exposure to CAI interventions over an extended timeframe.

The purpose of the current study was to explore the benefits of long-term use of a CAI curriculum for elementary school students. It is predicted that (1) if there is a salient effect for the curriculum then there will be a benefit to the students' literacy skills after they have ceased to use, and that (2) if there is a compounding effect for sustained long-term usage, then there will be differences in performance between students using the curriculum at varying levels of usage and between students using the program for varying numbers of years.

2. Methods

2.1. Participants

This study consisted of elementary school students ($N = 1,979$) enrolled in a public school district in South Carolina. Students were enrolled in kindergarten during the 2015-2016 school year and first grade during the 2016-2017 school year.

The two years of usage group ($n = 983$) consisted of students who used Waterford during the 2015-2016 (kindergarten) and 2016-2017 (first grade) school years. The kindergarten usage only group ($n = 29$) consisted of students who used Waterford during the 2015-2016 (kindergarten) school year and had no usage during the 2016-2017 (first grade) school year, while the first grade usage only group ($n = 905$) consisted of the inverse. The no usage group ($n = 62$) consisted of students who did not use Waterford in either year. The high usage sub-groups consisted of students with at least 2,000 minutes of usage in each relevant year.

2.2. Materials

Waterford Early Reading Program. The program offers a comprehensive, computer-adaptive pre-reading and reading curriculum for pre-kindergarten through second grade students. The software presents a wide range of multimedia-based activities in an adaptive sequence tailored to each student's initial placement and his or her individual rate of growth throughout the complete reading curriculum.

Developmental Reading Assessment (DRA). The DRA is a standardized reading test used to determine a student's instructional level in reading. The DRA is administered individually to students by teachers and/or literacy coaches. The test identifies whether the student is below, meeting, or exceeding grade level reading expectations.

2.3. Procedure

Kindergarten students were expected to use Waterford for fifteen minutes per day, five days per week, and first grade students were expected to use Waterford for thirty minutes per day, five days per week. Usage was tracked within the program and monitored weekly, and total minutes of usage for each school year was calculated. The DRA was administered at the middle and end of the year.

3. Results

3.1. Kindergarten and first grade usage compared to no usage

Independent samples *t*-tests examining group differences in DRA middle and end of year scores between the experimental group and the control group was conducted (see Table 1). Analysis of middle of year scores revealed a significant difference between groups, $t(1, 966) = -4.10$, $p < .01$, due to higher middle of year scores made by experimental students than by control students. Effect size ($d = 0.67$). Analysis of end of year scores revealed a significant difference between groups, $t(1, 38) = -3.99$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.67$).

3.2. Usage in kindergarten only compared to no usage

Independent samples *t*-tests examining group differences in DRA middle and end of year scores between the experimental group and the control group was conducted (see Table 1). Analysis of middle of year scores did not reveal a significant difference between groups, $t(1, 57) = -1.82$, $p = .073$; however, students in the experimental group had higher middle of year scores than control students. Analysis of end of year scores revealed a significant difference between groups, $t(1, 49) = -2.35$, $p < .05$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.74$).

3.3. Usage in first grade only compared to no usage

Independent samples *t*-tests examining group differences in DRA middle and end of year scores between the experimental group and the control group was conducted (see Table 1). Analysis of middle of year scores revealed a significant difference between groups, $t(1, 844) = -3.49$, $p < .01$, due to higher middle of year scores made by experimental students than by control students. Effect size ($d = 0.57$). Analysis of end of year scores revealed a significant difference between groups, $t(1, 38) = -3.37$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.57$).

Table 1. Middle and End of First Grade DRA Scores.

		Treatment			Control			
		M	*SD*	*N*	*M*	*SD*	*N*	*p*
K and 1st	Mid Year	10.84	4.61	929	7.74	4.89	39	.00**
Usage	End of Year	18.19	5.26	950	13.76	6.68	37	.00**
	Mid Year	10.65	7.28	20	7.74	4.89	39	.07
K Only Usage	End of Year	19.00	8.18	14	13.76	6.68	37	.02*
	Mid Year	10.33	4.51	807	7.74	4.89	39	.00**
1st Only Usage	End of Year	17.51	5.68	869	13.76	6.68	37	.00**

*$p < .05$, **$p < .001$

3.4. Kindergarten and first grade high usage compared to no usage

Independent samples *t*-tests examining group differences in DRA middle and end of year scores between the experimental group and the control group was conducted (see Table 2). Analysis of middle of year scores revealed a significant difference between groups, $t(1, 239) = -4.91$, $p < .01$, due to higher middle of year scores made by experimental students than by control students. Effect size ($d = 0.86$). Analysis of end of year scores revealed a significant difference between groups, $t(1, 42) = -4.95$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.88$).

3.5. High usage in kindergarten only compared to no usage

Independent samples *t*-tests examining group differences in DRA middle and end of year scores between the experimental group and the control group was conducted (see Table 2). Analysis of middle of

year scores did not reveal a significant difference between groups, $t(1, 47) = -1.07$, $p = .291$; however, students in the experimental group had higher middle of year scores than control students. Analysis of end of year scores revealed a significant difference between groups, $t(1, 40) = -2.40$, $p < .05$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 1.14$)

3.6. High usage in first grade only compared to no usage

Independent samples *t*-tests examining group differences in DRA middle and end of year scores between the experimental group and the control group was conducted (see Table 2). Analysis of middle of year scores revealed a significant difference between groups, $t(1, 404) = -5.29$, $p < .01$, due to higher middle of year scores made by experimental students than by control students. Effect size ($d = 0.89$). Analysis of end of year scores revealed a significant difference between groups, $t(1, 40) = -4.78$, $p < .01$, due to higher end of year scores made by experimental students than by control students. Effect size ($d = 0.82$).

Table 2. Middle and End of First Grade DRA Scores for Students with High Usage.

		Treatment			Control			
		M	*SD*	*N*	*M*	*SD*	*N*	*P*
K and 1st Usage	Mid Year	11.77	4.65	202	7.74	4.89	39	.00**
	End of Year	19.42	4.62	206	13.76	6.68	37	.00**
K Only Usage	Mid Year	9.80	7.32	10	7.74	4.89	39	.29
	End of Year	21.20	4.60	5	13.76	6.68	37	.02*
1st Only Usage	Mid Year	11.54	4.20	367	7.74	4.89	39	.00**
	End of Year	19.15	5.00	377	13.76	6.68	37	.00**

*$p < .05$, **$p < .001$

4. Conclusions

The purpose of the current study was to explore the effects of long-term use of Waterford for elementary school students. Results generally supported a beneficial effect of the use of the curriculum: Across all comparison groups, students who used Waterford had consistently higher end of year literacy scores compared to students who did not use the curriculum.

Students who used the program only in kindergarten significantly outperformed students in the control group on first grade literacy scores. Students still saw meaningful benefit from the program a year after they stopped using it, indicating a salient effect on young students' literacy skills. This is noteworthy as previous literature has indicated that the meaningful effects of CAI intervention tended to be particularly short lived for earlier grades (Ecalle, Magnan, & Calmus, 2009; Suggate, 2016). This finding supports a role for CAI in the broader body of literature which stresses the importance of early and effective intervention for young learners.

The findings of the current study offered support for a dosage effect for CAI intervention. While analysis showed all students significantly outperformed their control counterparts, the largest effect sizes were found for students with high usage. Students with both sustained and long-term usage of the curriculum improved in a way that students with only long-term usage over the same timeframe did not. This is consistent with, and an extension of, prior research (Shamir, Feehan, & Yoder, 2017a; Shamir, Feehan, & Yoder, 2017b), demonstrating that a higher dose of a CAI intervention can lead to better results for young students.

It should be acknowledged briefly that the current study took place within a single school district. This does somewhat limit the generalizability of its findings as it is possible that local demographic, cultural, or socioeconomic confounds may have inadvertently affected the results. The methodology of future research would be made more robust by including a broader sample of multiple school districts. Additionally, expanding the scope of the study to cover students' entire academic careers could offer further insight into the long-term effects of CAI.

References

Aunio, P., & Niemivirta, M. (2010). Predicting children's mathematical performance in grade one by early numeracy. *Learning and individual differences, 20*(5), 427-435.

Boone, R., & Higgins, K. (1993). Hypermedia basal readers: Three years of school-based research. *Journal of Special Education Technology, 12(*2), 86-106.

Chambers, B., Slavin, R. E., Madden, N. A., Abrami, P., Logan, M. K., & Gifford, R. (2011). Small-group, computer-assisted tutoring to improve reading outcomes for struggling first and second graders. *The Elementary School Journal, 111*(4), 625-640.

Ecalle, J., Magnan, A., & Calmus, C. (2009). Lasting effects on literacy skills with a computer-assisted learning using syllabic units in low-progress readers. *Computers & Education, 52*(3), 554-561.

Fälth, L., Gustafson, S., Tjus, T., Heimann, M., & Svensson, I. (2013). Computer-assisted interventions targeting reading skills of children with reading disabilities–A longitudinal study. *Dyslexia, 19*(1), 37-53.

Gray, A., Goldsworthy, H., May, H., & Sirinides, P. (2017). Evidence for early literacy intervention: The impacts of reading recovery. *CPRE Policy Briefs.* Retrieved from http://repository.upenn.edu/cpre_policybriefs/82

Hansen, D. (1968). Computer-assisted instruction and the individualization process. *Journal of School Psychology, 6*(3), 177-185.

Jethro, O. O., Grace, A. M., & Thomas, A. K. (2012). E-learning and its effects on teaching and learning in a global age. *International Journal of Academic Research in Business and Social Sciences, 2*(1), 203.

Kena, G., Hussar, W., McFarland, J., de Brey, C., Musu-Gillette, L., Wang, X., ... & Barmer, A. (2016). The condition of education 2016. NCES 2016-144. National Center for Education Statistics.

Kulik, C. L. C., & Kulik, J. A. (1991). Effectiveness of computer-based instruction: An updated analysis. *Computers in Human Behavior, 7(*1), 75-94.

Levin, H. M., Glass, G. V., & Meister, G. R. (1987). Cost-effectiveness of computer-assisted instruction. *Evaluation Review, 11*(1), 50-72.

Marulis, L. M., & Neuman, S. B. (2010). The effects of vocabulary intervention on young children's word learning: A meta-analysis. *Review of Educational Research, 80*(3), 300-335.

National Mathematics Advisory Panel. (2008). Foundations for success: The final report of the National Mathematics Advisory Panel. US Department of Education.

Neumann, M. M., & Neumann, D. L. (2014). Touch screen tablets and emergent literacy. *Early Childhood Education Journal, 42*(4), 231-239.

Piasta, S. B., Justice, L. M., McGinty, A. S., & Kaderavek, J. N. (2012). Increasing young children's contact with print during shared reading: Longitudinal effects on literacy achievement. *Child Development, 83*(3), 810-820.

Ragosta, M. (1982). Computer-assisted instruction and compensatory education: The ETS/LAUSD Study. The Final Report.

Ramey, S. L., & Ramey, C. T. (2007). Early educational interventions: Principles of effective and sustained benefits from targeted early education programs. *Handbook of Early Literacy Research, 2*, 445.

Saine, N. L. (2010). On the rocky road of reading: Effects of computer-assisted reading intervention for at-risk children. *Jyväskylä Studies in Education, Psychology and Social Research*; 0075-4625; 400.

Saine, N. L., Lerkkanen, M. K., Ahonen, T., Tolvanen, A., & Lyytinen, H. (2010). Predicting word-level reading fluency outcomes in three contrastive groups: Remedial and computer-assisted remedial reading intervention, and mainstream instruction. *Learning and Individual Differences, 20*(5), 402-414.

Shamir, H., Feehan, K., Yoder, E. (2017a). Using adaptive CAI to supplement literacy development in early learners. Proceedings from EdMedia: World Conference on Educational Media & Technology. Washington, D.C.

Shamir, H., Feehan, K., Yoder, E. (2017b). Does CAI improve early math skills? Proceedings from CSEDU: International Conference on Computer Supported Education. Porto, Portugal.

Schoppek, W., & Tulis, M. (2010). Enhancing arithmetic and word-problem solving skills efficiently by individualized computer-assisted practice. *The Journal of Educational Research, 103*(4), 239-252.

Smith, H. J., Higgins, S., Wall, K., & Miller, J. (2005). Interactive whiteboards: boon or bandwagon? A critical review of the literature. *Journal of Computer Assisted Learning, 21*(2), 91-101.

Suggate, S. P. (2016). A meta-analysis of the long-term effects of phonemic awareness, phonics, fluency, and reading comprehension interventions. *Journal of Learning Disabilities, 49*(1), 77-96.

Suppes, P., & Morningstar, M. (1969). Computer-assisted instruction. *Science, 166*(3903), 343-350.

Tamim, R. M., Bernard, R. M., Borokhovski, E., Abrami, P. C., & Schmid, R. F. (2011). What forty years of research says about the impact of technology on learning: A second-order meta-analysis and validation study. *Review of Educational Research, 81*(1), 4-28.

Verhallen, M. J., & Bus, A. G. (2010). Low-income immigrant pupils learning vocabulary through digital picture storybooks. *Journal of Educational Psychology, 102*(1), 54.

CHILDREN LEARN COMPUTATIONAL THINKING IN THE CLASSROOM

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Abstract

In the context of Education and Training for the 21st century, where the Digital Fact (continuum of technological advances) plays a leading role, the redefinition of the teaching and learning process becomes mandatory. This transformation must focus on improving the skills that allow human and social development. These advances are accompanied by new challenges, and the society needs to be prepared for them.

Collaboration, communication, creativity, critical thinking and the problem solving ability shape a set of competencies that are considered essential in the 21st century. These competencies can be approached from a macro-competency called Computational Thinking, which is linked to the Digital Fact. Therefore, it arises the need to know what will be the effects produced by Computational Thinking on said competencies.

To achieve this purpose, a set of learning materials has been applied, which contributed to the development of this macro-competency in children. Subsequently, its impact on the rest of the competencies has been analyzed through the application of a set of trials. This analysis has been carried out based on the grades obtained by the students in the program developed specifically to improve the Computational Thinking from a Primary Education and ICT perspective. This way, a confirmatory research has been started and concluded following the method of the Case Study. The tools that enabled to obtain data were tests and tasks that measured the chosen competencies.

Regarding competencies, using a significance level $\alpha = 0.05$, it has been shown that for the case studied, the qualifications obtained in the Computational Thinking development program did have a significant relationship with the collaborative (p-value = 0.009), critical thinking (p-value = 0.018) and problem solving competencies (p-value = 0.008 and p-value = 0,031).

It was concluded, in consequence, that Computational Thinking is a macro-competency that allow to develop the necessary skills for the 21st century in a global way.

Keywords: Competencies, skills, computational thinking, digital fact, education.

1. Introduction

The current world is volatile, uncertain, complex and ambiguous, partly due to the huge amount of technological changes that have been happening. These changes allow human beings to establish new links from which knowledge flows in greater proportion and at a greater speed. Faced with this context, education needs to be remodeled in order to adapt to a situation that probably will be maintained in the future. Knowledge is the new raw material and people are at the center of society, being responsible for making a good use of that knowledge, organizing it, adapting it and transforming it so that it continues to be the engine of social change.

In order for people to have the necessary tools to face change and move through it, it is essential that the efforts for education and training are increased. Education is the starting point when you want to generate a deep social change with guarantees of success. The process must integrate knowledge with other skills or competencies, these being increasingly important in the integral development of the human being.

The generic competencies are characterized by their transversality and their comprehensive nature, and they should be addressed from all areas of knowledge, such as formal, non-formal and informal knowledge. In the case of the research that has been carried out, the study of the selected competencies has been approached from the formal point of view, orienting itself towards the Primary Education students, since it is one more stage in their personal development and learning process for life, coexistence and citizenship, regardless of the route they follow later through the Spanish Educational system.

The competencies selected as the object of the study and considered essential for the development of the human being in the 21st century, neither exclusive nor excluding, were creativity, critical thinking, communication, collaboration and collaborative problem solving. All of them found under the umbrella of a higher order competency called Computational Thinking (CT), which fits perfectly inside the digital world full of challenges in which the current society is immersed.

Jeannette M. Wing (2006) says "thinking like a computer scientist means more than being able to program a computer. It requires thinking at multiple levels of abstraction." This statement doesn't address such competence as something exclusive to the world of Information Technology, but what it rather addresses is that this restructuring of thought can be exploited by everyone in a transversal way and regardless of their working area.

This means that CT could be developed from any subject, although the largest amounts of available resources are found in those areas that are related to Information and Communication Technologies, thus facilitating and simplifying the process. On the other hand, CT is a competency associated with the Digital Fact (continuum of technological advances and how these affect the life of the human being), since it emerges from the computing area, and this is an opportunity that can't be ignored either.

2. Objectives

With the aim of contributing to the definitions of education and training that are necessary for the 21st century. Thus, the purpose of this research is to analyze, verify and justify the effects produced by the development of Computational Thinking in competencies that are considered nuclear or essential for the 21st century in different stages of education and, in particular, in Primary Education students.

The selected competency frameworks are those developed by The Partnership for 21st Century Learning (P21) and the one prepared by the Assessment & Teaching of 21st Century Skills (ATC21S). Taking P21 as the main reference, this organization establishes that new learning skills are those that separate students who are prepared to face the complexity of the current world from those who are not. These skills are known as the 4C's: creativity, critical thinking, communication, and collaboration.

On the other hand, ATC21S develops new methods that teach and evaluate both skills and knowledge, with special emphasis on the competence of Collaborative Problem Solving. There's a direct link between the 4C's, the Collaborative Problem Solving and Computational Thinking. M. Romero (2016) has developed Model # 5C21, which synthesizes and reinforces the justification for the existence of a bidirectional relationship between them. That is to say, through the development of Computational Thinking, both the 4C's and the Collaborative Problem Solving competence are developed. According to Griffin and Care (2015), the main difference between individual and collective problem solving is the social nature of the latter, its need for communication, the exchange of ideas, the identification of the problem and its elements in a group; in addition to the agreements to establish different cause and effect connections.

This way, the formulation of the following questions and hypotheses is justified:
1. How can Computational Thinking help in the development of those competencies considered essential for the 21st century?
2. What is the relationship between the student's grades (their curricular evaluation) and the degree of development of these competences?

3. Methods

In order to answer the questions that form part of the purpose of the study, an investigation has been carried out, combining several methodologies in accordance with the framework that was set out by Fernández Alarcón (2006), in which it is established that empirical investigations can be exploratory and / or confirmatory. For the author, «exploratory investigations and confirmatory investigations are not exclusive in the same investigation».

As a result of a previous research of exploratory nature, a series of learning materials for the development of Computational Thinking were validated. These materials have been applied in a real context to measure the level of development of the competencies described and in order to examine if that level has a direct relationship with that of Computational Thinking. Although this research focused mainly on how to measure competencies and what were the results obtained, it is important to highlight that 10 experts had already successfully validated the learning materials that have been applied after analyzing their contents, methodology, resources and the evaluation system of the proposal.

Once the learning materials had been prepared and applied, the level of development of each of the competencies referred to in the objectives have been measured, taking into account the possibilities and limitations inherent in the case study addressed. For the measurement of competences, a confirmatory-quantitative investigation has been conducted, about which the following sections are focused on.

3.1. Participants

In the selection process of the students sample, a context of quasi-experimental research is referred to at all times, which is usually oriented to working with less-known facts or even focusing on the contribution of ideas that encourage the emergence of new questions, objectives or hypothesis. The sample of a quasi-experimental study is not chosen with the purpose of generalizing results, but is imposed by the convenience and the opportunities that were available to carry out the case study.

The population of this study (the participants) is formed by the students of the last year of Primary Education in a center of the city of Las Palmas de Gran Canaria (Spain). These students used an initial approach (almost definitive version) of the validated learning materials to later face the evaluation of the competences that were under study. Not all of them carried out the totality of the tests, due to circumstances beyond the researcher's control (mainly non-deliberate absences or temporality issues).

It is a post-facto investigation (Cancela Rodrigo, Cea Mayo, Galindo Lara and Valilla Gigante, 2010); that is, it has been carried out after a certain event has taken place; therefore, there are no previous backgrounds from which to extract comparative information. An analysis group was created for each competence based on the student's qualifications as an independent variable. The size of the sample, for the evaluation of each competence, is shown in Table 1.

Table 1. Sample size for the set of evaluated competences.

Competence	Sample size
Creativity	64
Critical thinking	76
Collaboration	71
Communication	70
Collaborative problem solving	74

3.2. Instruments

It's necessary to clarify that when a given competence is addressed, it's based on the operational definition of each one of them, which means that in this case the competences are the variables measured by the tools / instruments proposed.

Creativity was measured using the Torrance Creative Thinking Test in its figural form (Torrance, 1966). In this test, the students have to draw a series of strokes, to which they are subsequently assigned a score based on their fluency, originality, elaboration and flexibility, in accordance to the reference tables. On the other hand, Critical Thinking was analyzed applying the Cornell Test (Ennis, Millman, and Tomko, 2005). This test includes, in its first version, 72 critical thinking questions. The questions address five aspects: assumptions, credibility, deduction, induction and observation. One point is added for each correct answer. Collaboration has been measured from the Collaboration Self-Assessment Tool (CSAT), designed by Ofstedal, K., & Dahlberg, K. (2009) at the St. Cloud University Teacher Quality Enhancement Center with the objective of helping students learn more about themselves and build strong relationships with their peers. The test contains 11 questions with four response levels that are rated from 1 to 4 points. The last of the 4C's, Communication, was evaluated through the Connected Classroom Climate Inventory (CCCI), set out by Dwyer et al. (2004). This tool is designed for the university population, but could be adapted to be used in the last year of Primary Education. The questionnaire was made up of 18 items (affirmations) with 5 response levels (1 to 5 points) that graduate if the student agrees or disagrees with them.

Finally, to evaluate the Collaborative Problem Solving, it was carried out with the initial approach of ATC21S, in which several tools were created and then used by the students in groups of two in order to solve two tasks: a first symmetric task with shared resources in which each student was presented with a machine and they had to find out if the two worked in the same way, and a second asymmetric task, also with shared resources, in which they had to solve a mathematical problem. Through an analysis of the interactions of each group of students, the presence of certain indicators was sought, assigning points if they were present or not. These indicators were: taking into account the audience, responsibility initiative, resource management, systematics, solution, interaction, cause and effect, reflection and monitoring of hypotheses, analysis of problems and relationships.

4. Results and conclusions

Once the empirical results have been obtained, after having applied the assessment instruments described in the previous section, an analysis of them was carried out using statistical techniques that were adjusted to the case studied. All the tests took as reference significance level $\alpha = 0.05$.

First of all, it can be seen in Table 2 that both Critical Thinking (p-value = 0.018) and Collaboration (p-value = 0.009) are two competences that are indeed closely linked to the qualifications obtained after applying an educational program focused on the development of Computational Thinking, for the case studied.

Table 2. Results of the statistical test of hypothesis for the 4C's.

Competence	p-value
Creativity	0.867
Critical thinking	0.018
Collaboration	0.009
Communication	0.490

Finally, the two activities that evaluated the Collaborative Problem Solving competence show a p-value lower than $\alpha = 0.05$, which showed that, for the case addressed, this competence is also related to the development of Computational Thinking.

Table 3. Results of the statistical verification of hypothesis for Collaborative Problem Solving.

Collaborative Problem Solving	p-value
Task 1	0.008
Task 2	0.031

From the previous quantitative results it can be concluded that when it comes to the relationship between the qualifications obtained from the program which was specially designed to develop Computational Thinking and the results of the tests, a relation of interdependence is observed. This is the case of Critical Thinking, Collaboration and Collaborative Problem Solving; that is, Computational Thinking develops itself and other essential competencies for the 21st century.

The way in which competences are measured should be focused on the ability of students to apply new knowledge and not so much in the curricula. The development of these competences must be done through the realization of tasks and the resolution of real problems that allow students to associate what they have learned with real cases.

From the previously stated, it could be said that a 'developmentalist' learning model is the one that brings the most advantages to the new 21st century society, where the 'scaffolding' of L. Vygotsky (1987) comes into play to help students be able to incorporate new knowledge to what they already know and overcome the problems that arise throughout their lives.

References

Cancela, R., Cea, N., Galindo, G. & Valilla, S. Informe. Trabajo de clase. (2010). *Metodología de la investigación educativa: Investigación ex post facto.* Trabajo de alumnos, Educación Especial. UAM. Madrid, España: UCM. Retrieved from: https://www.uam.es/personal_pdi/stmaria/ jmurillo/InvestigacionEE/Presentaciones/Curso_10/EX-POST-FACTO_Trabajo.pdf

Dwyer, K. K., Bingham, S. G., Carlson, R. E., Prisbell, M., Cruz, A. M., & Fus, D. A. (2004). Communication and connectedness in the classroom: Development of the connected classroom climate inventory. *Communication Research Reports*, 21(3), 264-272.

Ennis, R. H., Millman, J., & Tomko, T. N. (2005). *Cornell Critical Thinking Tests Level X & Level Z Manual: [includes administration, scoring, validity, user norms, reliability, consistency, item analysis, answers].* Retrieved from: http://www.worldcat.org/title/cornellcritical-thinking-tests-level-x-level-z-manual-includes-administration-scoring-validity-user-norms-reliability-constistency-item-analysis-answers/oclc/820375383?ht=edition&referer=di

Fernández, V. A. (2006). "Introducción a la investigación en ciencias sociales." *Working Paper del Departament d'Organització d'empreses de la Universitat Politècnica de Catalunya.* Retrieved from: https://upcommons.upc.edu/bitstream/handle/2117/501/Introducci%C3%B3n%20a%20la %20investigaci%C3%B3n%20en%20ciencias%20sociales.pdf.

González, K. (2017). *Aprendizaje de competencias para el siglo XXI, mediante el desarrollo del pensamiento computacional, en alumnos de primaria: un caso piloto en Canarias* (Doctoral dissertation, in Spanish). Unpublished doctoral dissertation. To be published in ULPGC Thesis Repository. Universidad de Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain. Author access: kilian57@gmail.com

Griffin, P., Care, E., & Editors. (2015). *Assessment and teaching of 21st century skills. Methods and approach.* New York, N.Y., USA: Springer.

Ofstedal, K., & Dahlberg, K. (2009). Collaboration in student teaching: Introducing the collaboration self-assessment tool. *Journal of Early Childhood Teacher Education*, 30(1), 37-48.

P21. (2009). *Framework for 21st century learning. Partnership for 21st Century Learning.* Retrieved from: http://www.p21.org/about-us/p21-framework

Romero, M. (2016). *"#5c21 5 key skills for 21st century education"* in #CoCreaTIC, 27 de julio. Message posted to: https://margaridaromero.wordpress.com/2016/07/28/5c21-5-key-skills-for-21st-century-education/

Torrance, E. P. (1966). *The Torrance Tests of Creative Thinking-Norms-Technical Manual Research Edition-Verbal Tests, Forms A and B-Figural Tests, Forms A and B. Princeton*, NJ, USA: Personnel Press.

Vygotsky, L. (1987). Zone of proximal development. *Mind in society: The development of higher psychological processes*, 5291, 157.

Wing, J.M. (2006). "Computational thinking represents a universally applicable attitude and skill set everyone, not just computer scientists, would be eager to learn and use" en *Communications of the ACM*, 49, Vol. 49 Issue 3, March 2006, pp. 33-35.

WRITING AT THE HIGHER EDUCATION LEVEL: DIFFICULTIES PRESENTED BY FIRST SEMESTER STUDENT TEACHERS

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Abstract

In spite of undergraduates having passed exams to enter higher education, this does not necessarily imply that they can read and write proficiently. In light of this situation, it is important to reflect on the initial education of teachers. This article presents some results of a broader research project investigating the socioeconomic-cultural profile of first-semester student teachers' reading and writing skills via questionnaire at a state university in São Paulo State, Brazil. This article aims to describe the reasons they give for their writing difficulties or insecurities. The research participants are 79 first-semester undergraduates in Pedagogy — 36 and 43 students from the afternoon and evening shifts of the program, respectively. Participation was made available to those interested in collaborating with the research — all of the students enlisted to participate. This research is of a qualitative nature with a descriptive-analytical approach. When asked about the reasons for their writing difficulties or insecurities, the participants indicated low self-confidence and increased anxiety, lack of knowledge about the topic/subject, deficient knowledge of standard language, no writing training/habit/practice, difficulty in organizing ideas, and poor reading habits.

Keywords: Writing in higher education, initial teacher education, writing difficulties.

1. Introduction

Writing is a reflective activity that promotes thinking. However, the educational situation with regard to writing is rather dismal in Brazil:

> […] when it comes to the basics, that is, to reading and writing proficiency, we have yet to overcome illiteracy. We are presently turning out a shameful number of illiterates, condemned as we stand, even in Latin America, to the embarrassing position of being unable to help our children to become proficient at reading and writing. As it is from there, that is, the ability to read and write proficiently, that students will be able to secure for themselves, during their schooling years, the knowledge capable ofchanging their lives and the world (Garcia, 2011, p. 9).

The reality in Brazil is such that students may go through the first years of elementary school without overcoming major reading and writing deficiencies.Brazilian elementary school graduates are virtually unable to produce and interpret texts. The situation has reached the point that many of our higher education students can be considered functional illiterates.

This study is part of a broader research project aimed at investigating the cultural, socioeconomic, reading, and writing profile of incoming students teachers by means of a questionnaire. A thorough analysis of the vast amount of collected data pointed to the participants' writing profile, especially their writing difficulties or insecurities. In this manner, the objective of this study is to describe the reasons first-semester student teachers give for their writing difficulties or insecurities.

2. Theoretical framework

Human beings, from time immemorial, have found many ways to record their ideas. However, it is not too muchto say that the advent of writing is a turning point in human history. Writing, as the sophisticated tool we have today, has undergone countless changes. In addition, most of today's civilizations are graphotechnical in nature, i.e., they are based on writing (Higounet, 2003).

In Brazil, programs to prepare professionals for the teaching of the "first letters" date back to the end of the 19th century when Normal Schools were established (Gatti, 2010). From then on, the concern with educating the Brazilian population has steadily increased, spanning different social and political contexts. It culminated with the creation of the Law of Directives and Bases of National Education (LDB) in 1996, the National Curricular Guidelines for Teacher Education in 2002, and the Curricular Guidelines for teaching licensure degreessanctioned by the National Education Council in subsequent years.

Regarding specifically the Pedagogy programs,

> […] only in 2006, after much debate, did the National Education Council sanction Resolution No. 1, of 05/15/2006, with the National Curricular Guidelines for these programs, granting them a teaching licensure status and attributing to them the education of teachers for preschools and the first years of elementary school, as well as high school in the modality Normal, when necessary and where Normal programs exist, and for youth and adult education, in addition to the education of school administrators. In spite of its wide-ranging attributions, the focal point of this teaching licensure program is to prepare teachers for the first years of elementary school (Gatti, 2010, p. 1357).

In view of the professional attributions specified in Resolution No. 1 of 05/15/2006, it is important to emphasize the importance of the role played by future teachers, as they will be the first teachers in the education of citizens conscious of their role in society.

For this reason, the ability to make effective use of words is indispensable to living in society. Nonetheless, writing opportunities in classrooms are few and lacking in reflection, which has a negative impact on the teaching of Portuguese even at the higher education level.

> Classroom writing has been reduced to a mechanical exercise of putting something on paper no matter what, whether or not it makes sense, whether or not it is relevant. This is even more serious when one observes that revision of what has been written is limited to correcting it at its most superficial linguistic level, namely, spelling, verbal agreement, accentuation, and other grammatical issues (Antunes, 2005, p. 27).

Moreover, incoming higher education students, after so many years interacting with the mother tongue, are expected to be able to use it proficiently, according to Velásquez (2012, p. 2):

> Functional literacy of students entering higher education is expected to be at top level, that is, their ability level should not limit their understanding and interpreting of texts. Higher education students should be able to read complex texts and make inferences and deductions in addition to being capable of making associations, comparisons, and evaluations about the text content, regardless of its genre.

Nevertheless, concerning the obstacles to achieving writing proficiency,

> Although these difficulties should not be expected among high school and higher education students, these students have shown once and again to exhibit major shortcomings regarding these skills, which are critical for good professional, intellectual, and social functioning; fundamental requirements for the full exercise of citizenship, a sine-qua-non in modern society (Gregório, 2006, p. 77).

On the other hand, besides their deficient schooling, higher education students show reluctance and several limitations to writing. Many students have much to share but do not know how to go about it. They lack time to practice writing. They lack motivation, since most of them do not view writing as an opportunity for them to find their place in the world and understand themselves and reality. Moreover, they are too concerned about writing well instead of writing with clarity (Vitória, 2011).

The aforementioned concepts will be addressed in the analyses of this study.

3. Methods

With writing in higher education as the object of investigation, a qualitative research was conducted at a public university in São Paulo State, Brazil.

Since the study aimed at profiling incoming undergraduates in Pedagogy, the research participants were first-semester student teachers. Efforts were made to map their writing and reading competencies as these competencies are mandatory for the effective exercise of the teaching profession.

In addition, it was deemed important to obtain their cultural and socioeconomic background as it may have and have had an impact on their education.

The sample of participants comprised first-semester students, 36 from the afternoon shift and 43 from the evening shift of the teacher education program. Participation was offered to students interested in collaborating with the research, with full adherence.

In view of the fact that research in the social sciences is predominantly quantitative when describing and explaining the phenomenon under investigation, a qualitative research design was selected to explain the characteristics and meanings of the data collected in depth (Oliveira, 2007). Additionally, a descriptive-analytical approach was adopted because, as stated by Martins (2008, p. 56), "the chief merit of a description is not necessarily its accuracy or details but its capacity to create a clear picture for its readers."

The data was collected by means of a questionnaire because it is "a research technique comprising a relatively large number of written questions presented to participants with the aim of eliciting their opinions, beliefs, feelings, interests, expectations, lived situations, etc." (Gil, 2008, p. 121).

The questionnaire was crafted to gather data on the participating students' cultural-socioeconomic status and reading/writing profile. It contained two parts: Part 1 comprised 14 close-ended questions, one mixed dependent question, and one open-ended question about their profile and Part 2 consisted of two open-ended questions and five mixed questions (multiple-choice questions that require explanation for option chosen) about their educational background as regards text writing.

Not all of the data collected by means of the questionnaire was used, only that concerning the reasons for their writing difficulties or insecurities. The data was analyzed by content analysis as described in Bardin (2011) and Franco (2008).

The research data was collectedat two moments on February 26, 2017, with 36 afternoon and 43 evening students of the Pedagogy program at the university. Informed consent was elicited from all participants. Seventy-nine responded questionnaires were collected.

4. Results and discussion

When asked about the *reasons for their writing difficulties or insecurities*, the main problems reported werelow self-confidence and increased anxiety, lack of knowledge about the topic or subject, deficient knowledge of standard language (grammar, punctuation, accentuation, etc.), no writing training/habit/practice, difficulty in organizing ideas, and poor reading habits. Other problems were reported, albeit on a smaller scale, as shown in Figure 1.

The problems reported by the participating students may be interpreted in several ways. It is indeed difficult to write about something about which one does not know much. Lack of knowledge about the writing topic can compromise consistency and communication of ideas. For this reason, many students reported that they lacked inspiration. However, writing neither can nor should be regarded as a gift, according to Vitória and Christofoli (2013, p. 47-48):

> […] if we allow ourselves to be guided by the concept of inspiration or the gift of writing, we will most probably freeze at the prospect of writing anything: herein prevails the notion of product. However, if we consider that writing is a skill that can be improved by systematic and continuous practice, we will probably find many opportunities to continually create and recreate modes and ways of better expressing what we think in writing: herein prevails the notion of process. If writing is assumed to be a process, then everyone can learn to write more and better.
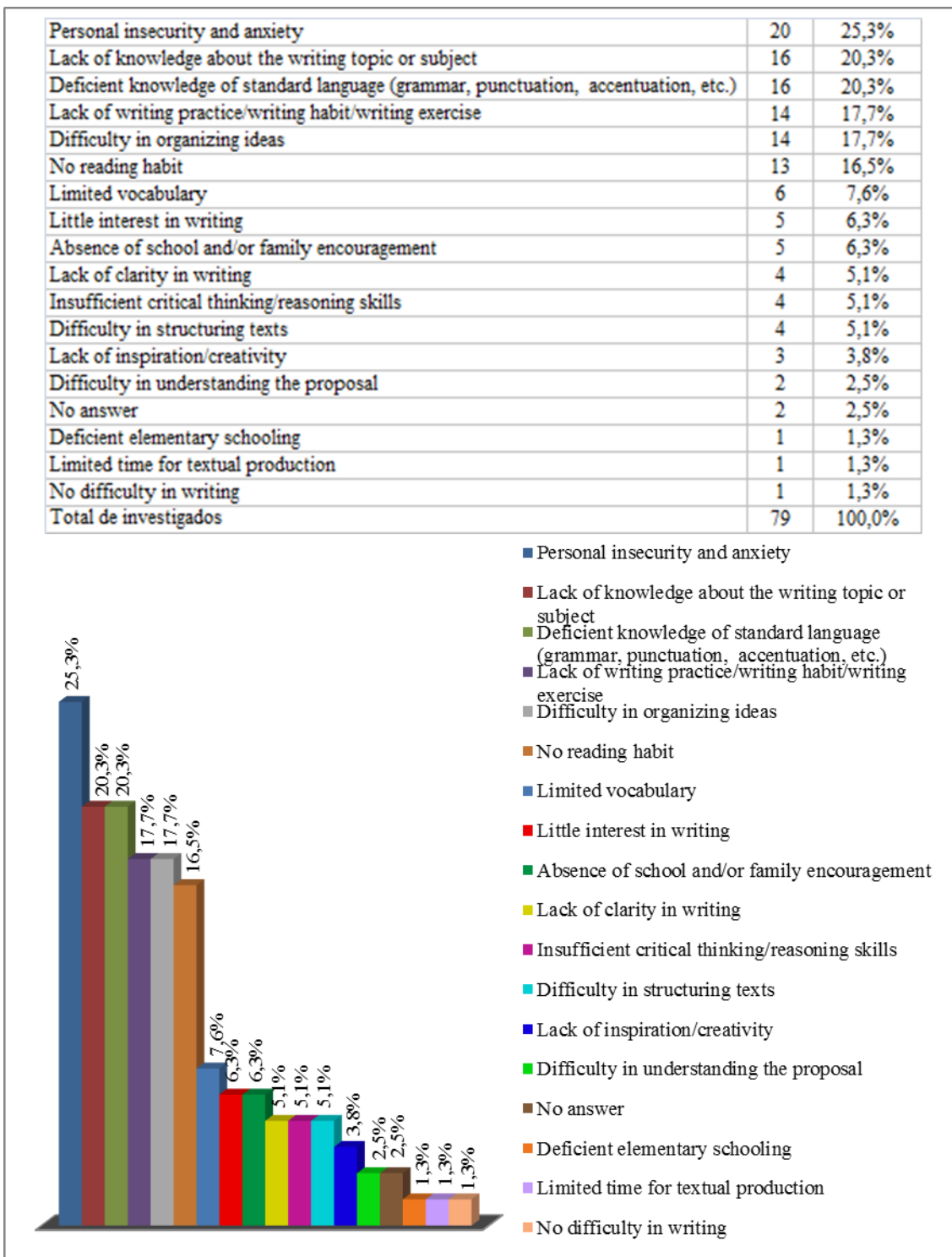
Moreover, although lacking reading practice does hinder writing, being a regular reader does not necessarily make one a proficient writer in as much as reading and writing are distinct intellectual tasks, that is, they mobilize different mental functions. Although it may be true that regular readers have more to write about, their success in writing is not at all guaranteed. Lack of self-confidence and difficulty in organizing ideas may interfere with regular readers' ability to write.

That said, a good knowledge about the writing topic is indeed of great importance, that is:

> […] it is necessary to read widely and understand, think about, and analyze different texts before any attempt at writing about something. Someone who reads, even if this is not done in a reflective and conscious way, is better capable of adapting to cultural modes of written communication (Vitória, 2011, p. 121).

However, although students' insufficient writing practice may have a negative impact on the achievement of writing proficiency, it is should be remarked that the other factors reported by the research participants can similarly compromise, perhaps to a large extent, the quality of writing.

Figure 1. Reasons for writing difficulties or insecurities.

Personal insecurity and anxiety	20	25,3%
Lack of knowledge about the writing topic or subject	16	20,3%
Deficient knowledge of standard language (grammar, punctuation, accentuation, etc.)	16	20,3%
Lack of writing practice/writing habit/writing exercise	14	17,7%
Difficulty in organizing ideas	14	17,7%
No reading habit	13	16,5%
Limited vocabulary	6	7,6%
Little interest in writing	5	6,3%
Absence of school and/or family encouragement	5	6,3%
Lack of clarity in writing	4	5,1%
Insufficient critical thinking/reasoning skills	4	5,1%
Difficulty in structuring texts	4	5,1%
Lack of inspiration/creativity	3	3,8%
Difficulty in understanding the proposal	2	2,5%
No answer	2	2,5%
Deficient elementary schooling	1	1,3%
Limited time for textual production	1	1,3%
No difficulty in writing	1	1,3%
Total de investigados	79	100,0%

Source: Data categorized by researchers based on results (2018).
Note: Percentages refer to frequencies of answers. Some participants' answers fell under more than one category due to the open-ended nature of some questions.

5. Final Remarks

Upon entering higher education, students have already spent 12 years at school. Much of that time has been dedicated to writing. However, in spite of all this time dedicated to writing, many deficiencies are detected when the incoming students' writing profile is analyzed.

Low self-confidence and increased anxiety, lack of knowledge about the writing topic or subject, deficient knowledge of standard language, no writing training/habit/practice, difficulty in organizing ideas, and poor reading habits were reported as major obstacles to writing.

For this reason, many teacher education programs have already included a Portuguese language course in their curricula in order to help their incoming students to overcome their writing shortcomings.

It is vital that higher education institutions acknowledge the existence of this problem and seek ways to improve their students' writing skills. Developing student teachers' writing competency is an important prerequisite to their future practice since they themselves will teach children how to read and write.

Notwithstanding, it should be acknowledged that teacher education programs have an arduous task ahead, given that mere inclusion of a single language course in their curricula will not suffice to help their students to overcome their writing difficulties and insecurities. That is, this problem must be tackled from multiple angles and, most importantly, regarded as the responsibility of each and every teacher educator.

References

Antunes, I. C. (2005). *Lutar com palavras: coesão e coerência* [Struggling with words: cohesion and consistency]. São Paulo, Brazil: Parábola Editorial.

Bardin, L. (2011). *Análise de conteúdo* [Content analysis]. Translated by Luís Antero Reto and Augusto Pinheiro. São Paulo, Brazil: Edições 70.

Franco, M. L. P. B. (2008). *Análise de conteúdo* [Content analysis] (3rd ed.). Brasília, Brazil: Liber Livro Editora.

Garcia, R. L. (2011). Prefácio à 3ª edição [Preface to 3rd edition]. In R. L. Garcia (Ed.), *Para quem pesquisamos – para quem escrevemos: o impasse dos intelectuais* [For whom we do research – to whom we write: the intellectual's dilemma] (pp. 07-10) (3th ed.). São Paulo, Brazil: Cortez.

Gatti, B.A. (2010, October-December). Formação de professores no Brasil: características e problemas [Teachers education in Brazil: characteristics and problems]. *Educação & Sociedade, 31*(113), 1355-1379.

Gil, A. C. (2008). *Métodos e técnicas de pesquisa social* [Research methods and techniques in the social sciences] (6th ed.). São Paulo, Brazil: Atlas.

Gregório, N. B. dos S. (2006). A produção do gênero discursivo relatório no ensino superior [Production of the discursive genre 'report' in higher education]. In C. M. Ghiraldelo (Ed.), *Língua portuguesa no ensino superior: experiências e reflexões* [Portuguese language in higher education: experiences and reflections] (pp. 77-92). São Carlos, Brazil: Claraluz.

Higounet, C. (2003). *História concisa da escrita* [A short history of writing]. Translated by Marcos Marcionilo. São Paulo, Brazil: Parábola Editorial.

Martins, J. (2008). A pesquisa qualitativa [Qualitative research]. In I. Fazenda (Ed.), *Metodologia da pesquisa educacional* [Methodology of educational research] (pp. 47-58). São Paulo, Brazil: Cortez.

Oliveira, M. M. de (2007). *Como fazer pesquisa qualitative* [How to do qualitative research]. Petrópolis, Brazil: Vozes.

Velásquez, V. C. Z. (2012, January-April). A importância da prática do letramento no ensino superior para a prova da OAB [The importance of literacy practice in higher education to Brazil's Bar examination]. *Virtù: Direito e Humanismo, Year 2, 1*(5).

Vitória, M. I. C. (2011). Qualidade do ensino superior e escrita [Quality in higher education and writing]. In M. E. D. P. Franco & M. C. Morosini (Eds.). *Qualidade na educação superior: dimensões e indicadores* [Quality in higher education: dimensions and indicators]. Vol. 4. Porto Alegre, Brazil: EDIPUCRS. Retrieved from http://ebooks.pucrs.br/edipucrs/qualidadedaeducacaosuperior4.pdf.

Vitória, M. I. C., & Christofoli, M. C. P. (2013, January-April). A escrita no ensino superior [Writing in higher education]. *Educação, Revista do Centro de Educação, 28*(1), 41-54.

TEACHERS' VIEWS AND PEDAGOGICAL PRACTICES WHEN TEACHING THE TOPIC EVOLUTION TO GRADE 12 LEARNERS

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Abstract

The world over, evolution has proved to be a contentious topic to teach to high school learners despite its value in acting as 'a blending concept' in Biology and 'the disease tracking foundation' in pharmacology and medicine. In the South African Life Sciences curriculum, evolution was introduced in 2008 hence teachers are obligated to address the topic adequately as there are accountability issues at the end of the year. Unfortunately previous research showed that South African teachers question the theory of evolution and are conflicted to teach it. Accordingly, 15 teachers were interviewed each once to explore their views on the teaching of the topic evolution to Grade 12 high school learners and the pedagogical practices they employ when teaching the topic. Qualitative analysis of the teachers' responses showed teachers' mixed views about the content of the topic of evolution, the value of that knowledge to learners and society in general and how best it can be taught. The study also showed that sometimes teachers failed to reconcile their beliefs and those of the learners and their science classroom practices. There is need for teacher professional development programmes to continuously develop teachers in terms of content and pedagogical skills as teachers can be challenged by their own personal belief systems, which conflict with their understanding of the theory of evolution.

Keywords: Teachers' views, pedagogical practices, Grade 12 learners.

1. Introduction

The world over, evolution has proved to be a contentious topic to teach to high school learners despite its value in acting as 'a blending concept' in Biology and 'the disease tracking foundation' in pharmacology and medicine. In the South African Life Sciences curriculum, evolution accounts for 44% of grade 12 content in terms of mark allocation in examinations. Hence teachers are obligated to address the topic adequately as there are accountability issues at the end of the year. Unfortunately previous research showed that South African teachers question the theory of evolution and are conflicted to teach it. Teacher's personal views on a topic or subject matter heavily influence or determine how the topic is treated in the classroom (Coleman, Stears & Dempster, 2015). Previous researchers alluded to the existence of a relationship between teachers' acceptance of evolution and the emphasis and level of how they teach it (Clément, 2013; Lovely & Kondrick, 2008; Mpeta, De Villiers & Fraser, 2014; Trani, 2004). The topic evolution was introduced into the South African Life Sciences curriculum in 2008. Understandably therefore the problem emanates from the fact that the current teachers were not taught evolution during their high school years or they were taught by teachers who themselves had not been exposed to the content and pedagogical practices suitable for the topic. Therefore the underlying issue is that these teachers do not accept the theory of evolution fully (Coleman, 2006), and they are scared to teach content for which they feel inadequately prepared (Ngxola & Sanders, 2008).

2. Literature review

Worldwide, the teaching of evolution in high schools has been a controversial issue. There had been lawsuits in America where creationists, feel discontented with the theory of evolution and advocate for the theory of 'intelligent design' (ID) as an alternative in explaining the diversity of life on earth (Getz, 2006). However, ID has been discredited as unscientific and labelled as a religious view (Getz, 2006). Though different researchers prefer to use the phrase the evolutionary theory instead of the theory of evolution, the current study uses the later. The theory of evolution encompasses all branches of biology which span from molecular genetics to ecology. In a study of 926 American teachers by Berkman and Plutzer (2011) 13% of the teachers advocated for the teaching of creationism or ID against 60% who

were not comfortable in choosing the former or evolution. Hence evolution is still a socio-scientific controversy in America (Hermann, 2008) and in other countries in Africa and Asia (Clément, 2013; Lovely & Kondrick, 2008; Mpeta, De Villiers & Fraser, 2014; Trani, 2004).

Sager (2008) pointed out that many scientific and religious organisations in education have expressed the need for the teaching of evolution due to its controversial nature. However, there is still resistance in different nations for example the United Kingdom and South Africa as well, such that there is a lot of inconsistency in how evolution is addressed in different curricula (Hermann, 2013). Many researchers have acknowledged that teachers experience problems in teaching evolution (Clément, 2013; Lovely & Kondrick, 2008; Mpeta, De Villiers & Fraser, 2014; Trani, 2004). Generally amongst the problems are that teachers lack a clear conceptualisation of evolution, which stifles the ability to teach it properly and that due to their religious background, they have problems in accepting evolution as an important and key principle in Biology (Coleman et al., 2015). It is important for teachers to have a deep understanding of the principles underpinning the Nature of Science (NOS) and the content of evolution (Lederman, 1992) for proper teaching and engagement with the content in the science classroom (Coleman et al., 2015). Previous research showed that teachers find it difficult to understand concepts on evolution (Kirsten, 2014) and that there is inconsistency between teachers' and learners' beliefs about the NOS (Abd-El-Khalick & Lederman, 2000), which causes problems in the science classroom. In a study to determine any existence of a relationship between South African University pre-service teachers' understanding of evolution and the NOS, and their level of acceptance of evolution, Coleman et al. (2015) found that the participants had more acceptable beliefs about the NOS, and higher level of acceptance of evolution.

3. Objectives

Accordingly, the study sought to answer two research questions: How do Grade 12 Life Sciences teachers perceive the teaching of the topic evolution to Grade 12 high schools learners? and what are their pedagogical practices when teaching the topic to Grade 12 Life Sciences learners?

4. Methods

In a qualitative case study research design 10 practising Life Sciences teachers, six females and 4 males were each interviewed once to determine their perceptions and pedagogical practices when teaching the topic evolution to Grade 12 learners. The design was appropriate for the study as it is a naturalistic approach that sought to understand phenomena in context-specific settings (Grade 12 life sciences teachers teaching evolution), where the researcher did not manipulate the phenomenon of interest (Patton, 2002). Previous research studies in education have used case-study research design more to explore the processes and dynamics of practice (Merriam, 1998).

The researcher provided three hypothetical scenarios of teachers teaching the topic evolution to high school learners, which stimulated teachers to revisit their thought processes on how they have taught the topic that year and during the previous years. The researcher's probing questions evoked responses from the teachers which provided an insight into the teachers' views about the content of the topic evolution; need for continued inclusion of the topic in the curriculum; value of the content and skills to learners and society in general and how teachers taught the topic in terms of how they introduced it to the learners and the teaching strategies and activities they employed. Each interview lasted 45 minutes to an hour, was captured using audio-recorder and then transcribed verbatim immediately after each interview. Data analysis involved identifying codes then analysed using Atlas ti version 8 to determine recurring themes from the data.

Semi-structured interviews were suitable for this study because they are neither as restrictive as fully-structured interviews nor as flexible as unstructured interviews (Karasar, 1995). At the same time, semi-structured interviews allowed the teachers to tell 'their own stories' in their own words, so that the issues the researcher had not thought of arose (Hatton & Smith, 1995).

5. Research findings and discussion

Analysis of the teachers' responses showed teachers' mixed views about the content of the topic of evolution, the value of that knowledge to learners and society in general and how best it can be taught in the science classroom. Teachers attested to the use of higher order questions, debates, argumentation and group discussions as strategies that allow learners to share their opinions based on their diverse cultural and religious backgrounds. The study also showed that sometimes teachers failed to reconcile their beliefs and those of the learners and their science classroom practices. The findings are presented under four subheadings.

5.1. Views about the content of the topic of Evolution

The majority of the teachers felt that evolution was the most complex and controversial topic compared to any other Life Sciences topics they were teaching. They raised issues that the topic generally contradicts people's socio-cultural beliefs, challenges different religious beliefs and they raised concerns on the truth of the content and reliability of its evidence. As such teachers pointed out that the concepts are controversial, particularly in a science classroom with learners from different cultures, which results in a clash between science and learners' belief systems.

Teachers complained that the topic is difficult, too broad and has a lot of content that needs to be covered within a short period of time before the learners write final matric examinations. As such, learners do not have enough time to engage with the topic as it is in their last year of study. They wished the content was distributed evenly from grade 10-12. The novice teachers mentioned that they lacked support as there were no readily available mentors to ask or share any ideas they might have on how to teach the topic. As such, they struggled to identify suitable ways of dealing with the topic particularly in formulating suitable activities. Hence they mostly relied on activities in the different textbooks.

5.2. Need for continued inclusion of the topic in the curriculum

Most teachers generally acknowledged that evolution covers important content that span beyond the educational boundaries and taps into learners' experiences. They indicated that it exposes learners to different fields of study. On that note teachers pointed out that evolution provides a background for Life Sciences subject as a whole, hence viewed it as extremely important to include it in the curriculum as it enforces learners to think deeper and be able to critique their belief systems against the scientific knowledge or vice versa. One of the teachers said, "In any case it is important for human beings to know their origins". This showed how much they valued the content of evolution.

When asked about the value of the content and skills individual learners acquire from studying the topic, teachers pointed out that it develops learners who have the desire to study and solve problems and make intelligent choices in life. Teachers viewed evolution as a topic that promotes learners' understanding as it provides practical scientific examples in their lives. They also pointed out that in examining the different views and theories that support or oppose evolution, learners develop skills in assessing different sources of evidence and realise that reasonable compromise is often an important part of democratic decision-making process. In this case teachers were referring to experiences learners go through when considering various viewpoints such as creationism, big bang theory, and Lamarckian theory visa vis natural selection. Some pointed out that learners develop understanding of the strengths and weaknesses of data in any scientific investigation.

In interpreting teachers' views, it shows that learners are exposed to the tenets of the Nature of Science (NOS), which may not be so apparent when teaching other topics in Life Sciences. Two of the teachers (those with post graduate qualifications) attested to the fact that learners acquire knowledge of how science can resolve issues and thereby develop critical thinking skills, skills to use rational methods when planning some investigations and also in considering significant issues in any scientific practice. Most importantly several teachers pointed out that when learners are taught evolution well, they develop positive attitudes and willingness to recognise differing viewpoints, which is a valuable skill and is a normal process in real life situations.

5.3. How they introduced and taught the topic to learners

When asked about how they normally introduced the concepts on evolution, teachers were quite clear that in as much as they are conflicted by their own belief systems and those of the society in general, evolution should be introduced to learners in an enthusiastic manner, which dissolves the boundaries of socio-cultural prejudices and facilitate learners to express their opinions without the teacher constraining them. Teachers however, indicated that such introductions retard the progression of the lesson as more time is spent on the introduction at the expense of content coverage. They alluded to the issue that when introducing the topic, one should not shy away from addressing important issues due to religious affiliations and resistance from learners. Teachers provided a range of ways that evolution can be introduced to learners. These include introducing the topic as an integral part of NOS, that means teaching using inquiry approaches, use of role play with learners taking different roles ranging from being plant species, microorganisms to primates living in one community, use of question and answer technique to elicit learners' prior knowledge or misconceptions and use of videos to capture learner attention.

5.4. Teaching strategies and activities they employed

Teachers were forthcoming in suggesting teaching strategies and activities that can be employed in teaching evolution to grade 12 learners. There were generally two groups of teachers, those who were 'conservative' and the 'progressive' ones. The later group mentioned engaging learners in controversial

debates and then guide learners in building consensus, use of scenarios or case studies familiar to learners, using higher order questions, which stimulate small and large group discussions and argumentation. They emphasised that in this way a classroom atmosphere that is positive is maintained, and openness encourages learners to 'take a position' and make meaningful decisions. The use of open ended questions is critical as learners explore and build bridges between their existing worldviews and new scientific knowledge. Learners would share their opinions and ideas in group discussions, learn from each other and get an opportunity to justify or refute their previous view points after consulting different sources of information. Cavagnetto (2010) insists that if learners participate in an argument, they develop communication skills, metacognition, critical thinking and understand the culture and practice of science and scientific literature. Learners are challenged to develop a position based upon what they will have discovered in their search for evidence and in that they learn scientific content (Klosterman & Sadler, 2011).

The 'conservative' group of teachers indicated that direct instruction is sometimes suitable as such a teaching strategy does not challenge learners' beliefs and allows teachers to provide explanations of the content easily. They also felt that such teacher explanations will address learner misconceptions and not much time is wasted to allow completion of syllabus and learners will only ask relevant questions without straying from the curriculum requirements. One of the teachers also said, "When you stick to the textbook content after consulting different sources, you are safeguarding yourself from any criticism from the parents". Such teacher practices show lack of understanding of the theory of evolution and the NOS, which causes them to teach the topic to learners in an isolated manner, leaving room for misinterpretations and misconceptions by the learners (Coleman et al., 2015).

The teachers were honest in admitting that they did not properly implement most of the strategies they mentioned and as such their learners generally maintained a poor understanding of evolution, which raises questions on whether teachers are fully prepared to teach evolution for meaningful understanding.

It is important to note that teachers expressed their views based on their theoretical understanding of the pedagogical practices of teaching abstract and difficult concepts. It would have been more appropriate to observe the same teachers teaching the topic and assessing their pedagogical practices, rather than basing on what they say. Previous literature indicated that the assessment of teachers' practices has been shown to be very difficult as it requires a combination of approaches that can collect information about what teachers know, what teachers do, and the reasons for their actions (Baxter & Lederman, 1999). This is because teachers' actions are a more accurate representation of what they know and believe than the usual array of self-report measures (van Driel, Bijaard & Verloop, 2001). Most importantly teachers cannot verbalise all of their practice; therefore what they know may be uncovered better from their performances than from what they say. In addition, what teachers say does not always reflect what they do. Therefore a deeper understanding of teacher knowledge could be best achieved by observing them in teaching, as Borko and Putman (1996) observed that teaching is contextualised and embedded in teachers' actions.

6. Conclusions

Teachers in this study acknowledged the value of evolution as a key principle in Biology and were quite knowledgeable about the teaching strategies that are appropriate in teaching the concepts in a comprehensible manner. The teachers however, clearly indicated their inability to adequately implement these teaching strategies in the science classroom particularly faced with learners from diverse socio-cultural and religious beliefs. There is need for teacher professional development programmes to continuously develop teachers in terms of content and pedagogical skills as teachers can be challenged by their own personal belief systems, which conflict with their understanding of the theory of evolution. It can be concluded that teachers who lack understanding of nature of science, experience difficult in teaching theory of evolution for scientific understanding because previous studies have found a correlation between understanding the nature of science and acceptance of evolution. Important questions therefore arise: Do teachers understand the nature of science because Lederman (1992) views the NOS as the cornerstone for effective teaching and learning of science as a subject? If they understand, how can they incorporate the tenets of the nature of science in teaching evolution for learner understanding? If they do not understand, how can pre-service and in-service professional development programmes be structured to accommodate content on evolution, the tenets of the NOS, and their incorporation in science teaching?

References

Abd-El-Khalick, F. & Lederman, N.G. (2000). The influence of history of science courses on students' views of nature of science. *Journal of Research in Science Teaching (JRST),* 37(10):1057-1095. Doi: 10.1002/1098-2736(200012)37:10<1057:AIDTEA3> 3.0.CO; 2-C

Baxter, J. A., & Lederman, N. G. (1999). Assessment and measurement of pedagogical content knowledge. In J. Gess-Newsome & N. G. Lederman (Eds.), *Examining pedagogical content knowledge* (pp. 147–161). Dordrecht: Kluwer.

Berkman, M. B., & Plutzer, E. (2011). Defending evolution in the courtroom, but not in the classroom. *Science, 331*, 404–405.

Borko, H., & Putnam, R. T. (1996). Learning to teach. In D. C. Berliner & R. C. Calfee, (Eds.), *Handbook of educational psychology* (pp. 673–708). New York, NY: Macmillan.

Cavagnetto, A.R. (2010) Argument to foster scientific literacy: A review of argument interventions in K-12 Science contexts. *Review of Educational Research 80*(30), 336–371. doi: 10.3102/0034654310376953

Clément, P. (2013). Muslim teachers' conceptions of evolution in several countries. *Public Understanding of Science.* doi: 10.1177/0963662513494549

Coleman, J. (2006). *The FET curriculum and the teaching of evolution – what are the challenges facing teachers?* Paper presented at the 3rd Biennial Conference of the South African Association for Science and Technology Educators, 3-6 July, University of KwaZulu-Natal, Durban, South Africa.

Coleman, J., Stears, M. & Dempster, E. (2015). Student teachers' understanding and acceptance of evolution and the nature of science. *South African Journal of Education, 35* (2), doi: 10.15700/saje.v35n2a1079

Getz, W.M. (2006). The "Theory of Evolution" is a misnomer. *BioScience, 56*(2), 96-97.

Hermann, R.S. (2013). High school Biology teachers' views on teaching evolution: Implications for science teacher educators. *Journal of Science Teacher Education, 24*, 597–616. DOI 10.1007/s10972-012-9328-6

Hatton, N. & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education, 11*(1), 33–49.

Hermann, R. S. (2008). Evolution as a controversial issue: A review of instructional approaches. *Science & Education, 17*, 1011–1032.

Karasar, N. (1995). *Scientific research methods – concepts, principles and techniques*. Ankara: 3A Research Training Consultancy.

Kirsten, F. (2014). *Life sciences teachers' understanding of the nature of science within the context of teaching evolution.* Master's dissertation. Durban: University of KwaZulu-Natal.

Klosterman, M. I., & Sadler, T. D. (2011). Multi-level assessment of scientific content knowledge gains associated with socio-scientific issues-based instruction. *International Journal of Science Education, 32*(8), 1017-1043. doi:10.1080/09500690902894512

Lovely, E.C. & Kondrick, L.C. (2008). Teaching evolution: challenging religious preconceptions. *Integrative & Comparative Biology*, 48(2):164–174. doi: 10.1093/icb/icn026

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.

Mpeta, M, De Villiers, J.J.R. & Fraser, W.J. (2014). Secondary School Learners' Response to the Teaching of Evolution in Limpopo Province, *South Africa. Journal of Biological Education.* doi: 10.1080/00219266.2014.914555

Ngxola, N. & Sanders, M. (2008). *Teaching evolution in the new curriculum: Life Sciences teachers' concerns.* Proceedings of the Sixteenth Annual Conference of the South African Association for Research in Mathematics, Science and Technology Education. University of Lesotho, Maseru, Lesotho.

Patton, M. Q. (2002). *Qualitative evaluation and research methods* (3rd ed,). Thousand Oaks: SAGE.

Sager, C. (2008). Voices of evolution. Berkley, CA: The National Center for Science Education, Inc. Scharmann, L. C. (1994). Teaching evolution: Designing successful instruction. *Journal of Science Teacher Education, 4*, 122–129.

Trani, R. (2004). I won't teach evolution; It's against my religion. And now for the rest of the story… *The American Biology Teacher, 66*(6):419-427.

Van Driel, J. H., Bijaard, D., & Verloop, N. (2001). Professional development and reform in science education: The role of teachers' practice and knowledge. *Journal of Research in Science Teaching, 38*, 137-158.

DEVELOPING A RUBRIC FOR ANALYSING THE INCLUSION OF "SCIENTIFIC PRACTICES" IN PHYSICAL SCIENCES TEXTBOOKS

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Abstract

In the view of reframing classroom inquiry and achieving the common goal of the latest K-12 Framework in Science Education and Next Generation Science Standard (NGSS) of United States that all science learning process should engage learners in practices to construct and use scientific concepts and ideas. They highlighted the significance of science practices in helping learners to improve the ability of interpreting phenomena, solving problems and making informed decisions about person and society (National Research Council [NRC], 2012; NGSS Lead States, 2013). Hence, this paper describes the development and validation process of a rubric designed to analyse the inclusion of "science practices" in science textbook. The first phase describes in detail the process used in developing the rubric for analysing textbooks for inclusion of "science practices". The developed rubric included eight practices, 4 levels of each practice, and descriptions and examples for the levels. The secondary phase reports on the use of the rubric in a preliminary analysis of a Grade 10 physical science textbook. Qualitative content analysis was used for this study. The result indicates that the rubric developed is a valid instrument that can be used in analysing textbook for inclusion of "science practices".

Keywords: Inquiry-based learning, NGSS scientific practices, textbook analysis.

1. Introduction

Science practices have become the major objective in recent science education reform as means of rebranding inquiry-based learning, improving learners' literacy in science, and preparation for workforce (NGSS Lead States, 2013). Currently, the Framework for K-12 Science Education and the Next Generation Science Standards emphasized that learners should be engaged in the process of science practices to gain better understanding of science concepts and ideas (NRC, 2012; NGSS Lead States, 2013). Additionally, the latest National Curriculum and Assessment Policy Statements of South Africa prescribed the use of inquiry-based learning approach in promoting high knowledge and high skills for learners' understanding of science (Department of Basic Education [DBE], 2011, pg. 8).

"Science practices" refer to those major practices scientists engage while studying and constructing models and theories about the natural and human world (NRC, 2012). Learners' engagement in the process of science practices need appropriate content knowledge and skills. As a result, "science practices" were used instead of "science process skills" in order to advocate the importance of combining both content knowledge and skills simultaneous in the doing and learning of science (Stavros, 2016; Ramnarain & Hobden, 2015). In addition, this is to make the expected learners' active engagement in inquiry-based learning to be explicit. Consequently, engaging learners' actively in process of "science practices" will help learners to coordinate between inquiry skills and knowledge construction in order to gain understanding of the scientific knowledge development process; arouse learners' interest and curiosity (Ramnarain & Hlatswayo, 2018); and construct basic science concepts and ideas (Stavros, 2016).

The previous studies on analysing textbooks for inquiry-based learning used the five essential features of inquiry-based learning in developing the rubric for the textbook analysis (Aldahmash, Mansour, Alshamrani, & Almohi, 2016; Dunne, Mahdi & O'Reilly, 2013). These features include: Learner engages in scientifically oriented questions; Learner gives priority to evidence in responding to questions; Learner formulates explanations from evidence; Learner connects explanations to scientific knowledge; Learner communicates and justifies explanations. Each of these activities can vary in the degree (structure, guidance and coaching) to which it is directed by the teacher (NRC, 2000).

Recently, to address the confusion with the various views of inquiry, Next Generation Science Standards (NGSS) in United States of America highlighted the eight "scientific practices" that is key to

holistic experience of inquiry-based learning. These include: asking questions; developing and using models; planning and carrying out investigations; analysing and interpreting data; using mathematical and computational thinking; constructing explanation; engaging in argument from evidence; and obtaining, evaluating, and communicating information (National Research Council, [NRC], 2012; NGSS Lead States, 2013).

Textbooks serve as a vital tool in learning and teaching process, since they determine in large measure what is taught and learned in the classroom (Niaz & Maza, 2011). Researchers have investigated the role of science textbooks in implementing an inquiry-based approach and achieving other curriculum reform goals. It has been found that teachers heavily depend on the school science textbooks in advancing curriculum aims (Ramnarain & Chanetsa, 2017). In view of the emphasis now on "scientific practices" and the textbook dependency of teachers, this research was on the development of a rubric for the analysis of the inclusion of "scientific practices" in physical sciences textbooks.

2. Objectives of the study

The objectives of the study were to develop a rubric for analysing Physical Sciences textbooks for the inclusion of "science practices" and to apply this rubric in a preliminary analysis of a grade 10 Physical Sciences textbook.

3. Method

3.1. Development of a rubric for analysing science practices Sub-heading example

The first phase involved reviewing relevant literature on the recent science education K-12 Framework and Standards in order to gain insight into the concept of "science practices" (National Research Council [NRC], 2012; Next Generation Science Standard [NGSS], Lead States, 2013). A further search focussed on identifying instruments that were already being used in assessing learners' performance in science practices and in defining the levels of structure, guidance and coaching inherent to the science practices provided for the learners by the teacher or textbook. In developing the rubric, aspects of the McNeill, Katsh and Pelletier (2015) assessment tool known as Science Practices Continuum-Student Performance and a Drafted Inquiry Rubric developed by Council of State Science Supervisors (2001) were adopted and adapted in developing the 'science practices' rubric.

Three science education experts in the field of scientific inquiry research validated this rubric for theoretical underpinning and practical use. Based on their recommendations minor changes were made in this version of the rubric. In the final version, the rubric comprised of eight "science practices" distributed across four levels, with each level defining the amount of structure, guidance and coaching provided by the textbook or teacher (Aldahmash et al., 2016). The second stage involved piloting of the rubric in a preliminary analysis of one knowledge area (matter and material) in a Physical Sciences textbook.

3.2. Qualitative content analysis

The study adopted a qualitative content analysis approach in a pilot analysis to test the feasibility of the developed rubric in understanding the extent to which the physical science textbook represented the "science practices". Purposive sampling was used, the focus was on the 13 units of the matter and material knowledge area in a grade 10 physical science textbook recommended by the South Africa Department of Basic Education (DBE) and commonly used in physical sciences classroom. The data collected were units such as paragraphs, worked examples, activities, practical activities, figures with captions, tables with caption, and marginal comments to categories and sub-categories of "practices". The analytical framework used in this study incorporated the eight science practices that are highlighted in the Next Generation Science Standards (National Research Council, [NRC], 2012; NGSS Lead States, 2013). These "practices" identified in the previous section were constructed into conceptual categories and subcategories. To ensure the reliability of the analysed knowledge area in the physical science textbook, two independent experts in science education coded each unit of analysis as to which aspect of the "science practices" is included.

4. Results

Table 1 shows the developed rubric for analysing the inclusion of science practices in textbooks. It comprises of eight "science practices" distributed across four levels, with each level defining the amount of structure, guidance and coaching provided by the textbook. Then, Table 2 reports the result of the preliminary analysis using this rubric

Table 1. Inquiry practices continuum- rubric for scoring textbook.

NGSS Science practices	Variations			
	1(Not provided)	2(Structured)	3 (Guided)	4(Coached)
1.Asking questions	Provide no opportunities for students to ask questions	Enable students to select among provided questions or to pose new questions.	Enable students to pose new questions for investigation without evaluating their feasibility	Enable students to pose new questions for investigation and evaluate the feasibility of their questions.
	Example: Activity 5: Answer questions on properties of matter. Practical activity: Investigate the pattern and direction of a magnetic field	Example: Select one of the questions in the topics listed below for your research. Activity 6: Make up a list of ten questions about the periodic table.	Example: State an investigative question/ hypothesis for this investigation.	Example: State an investigative question / hypothesis. Review with peer whether it can be answered through scientific investigation or not.
2. Developing and using model	Provide students with no opportunities to create , or use models	Engages students to create or use models provided in textbook. The models focus on describing phenomena rather than alluding to predictions and explanations	Engage students to create and use models focused on predicting or explaining phenomena.	Engages students to create and use models focused on predicting or explaining phenomena and to independently evaluate the merit and limitations of the model.
	Example: Figure 2: A representation of liquid water. Illustration of characteristics of states of matter.	Example: Make a sketch of what an atom with an atomic number of 9 might look like. Include all the protons, neutrons and electrons in your drawing.	Example: Draw "before" and "after" diagrams to show how ionic bonding takes place in Magnesium sulphide compound (MgS)	Use an atomic model kit (or alternative materials) to build space-filling models or ball-and-stick models for compound in the table. Explain the construction, like and dislike about the model.
3. Planning and carrying out investigation	Does not engage students in designing or conducting investigations.	Engage students in planning and conducting investigations, but these opportunities are typically teacher-driven.	Engage students in designing and conducting investigations to gather data with guidelines.	Engage students in designing and conducting investigation to gather data independently. Evaluate plans for research.
	Example: Practical demonstration to observe a precipitation reaction.	Example: Step-by-step method provided in the textbook to investigate current and voltage in series circuits.	Example: Write up the experiment in form of a scientific report. Include the following: apparatus and methods.	Example: Use your research to design an investigation that will answer the question. Review the possibilities and limitations of the plan for investigation.
4. Analysing and interpreting data	Does not require students to use tables, graphs and charts to analyse and interpret data.	Engage students to work with data to organize or group the data in table or graphs with guidelines.	Engage students to work with data to organize or group the data in a table or graph, and to identify or recognize patterns or relationships in the data with minimal assistance.	Engage students to independently make decisions about how to analyse data (e.g. table or graphs), and to make sense of data by recognizing patterns or relations in the natural world.
	Example: Observe the physical changes that take place and record your observations. Textbook provides the discussion.	Example: Use the data in the table to plot a graph of lime scale build up against the increase in energy consumption.	Example: Create and analyze data in the graph from an investigation on the purification/ quality of tap and bottled water.	Example: Draw up a suitable table to record your result, draw graph of the result and discuss the shape of the graph
5. Using Mathematical and Computational thinking	Does not enable students to use mathematical skills (e.g., calculating, measuring and estimating)	Engage students to use mathematical skills or concepts provided in answering scientific or non-scientific question.	Engage students to use mathematical skills or concepts to answer a scientific question with guidelines.	Engages students to make decisions about what mathematical skills or concepts to use independently.
	Example: Worked examples to calculate the difference in electronegativity of Beryllium and Fluorine.	Example: Use the velocity vs time graph provided to calculate the acceleration.	Example: Measure and record voltage across resistors.Use the graph plotted to calculate instantaneous velocity at t=0,8s.	Example: Calculate the equivalent resistance of the parallel connection

6. Constructing Explanations	Provide no opportunities for students to create scientific explanations of phenomena.	Engage students to create scientific explanations but students' explanations of phenomena are descriptive instead of explaining how or why a phenomena occurs using evidence provided.	Engage students to create scientific explanations of phenomenon on how or why a phenomenon occurs.	Engage students to independently construct explanations that focus on explaining how or why a phenomenon occurs and use appropriate evidence to support their explanation.
	Example: Short paragraphs on thermal conductors and insulator provided in the textbook.	Example: Describe what an electric circuit is.	Example: Explain why the temperature does not change even though an energy change is taking place.	Example: Use the kinetic model to explain how a hot air balloon rises into the air when the gas is heated.
7. Engaging in Argument from evidence	Does not engage students in argumentation that uses appropriate evidence and reasoning to support claim.	Engage students in teacher – driven argumentation where they support their claims with evidence or reasoning.	Engage students collaboratively in student- driven argumentation where they support their claims with evidence or reasoning.	Engages students in student- driven argumentation that includes the use of evidence, reasoning that links the evidence of their claim, and critique of competing arguments.
	Example: Experiment idea- Test and classify the materials as: metals or non-metals; magnetic or non-magnetic; conductors, semiconductors or insulators. Not provided.	Example: Discussion- the voltage across the battery when no current is flowing is higher than when current is not flowing. Textbook provides the discussion.	Example. Discuss with peer or group discussion on the voltage across the battery when no current is flowing is higher than when current is not flowing.	Example: Debate on whether to connect ammeter in series or parallel across a circuit using enough information from research.
8. Obtaining, evaluating and communicating information.	Does not encourage students to read text for scientific information.	Encourage students to read text to obtain scientific information or communicate any aspects of their investigation by following prescribed procedures.	Encourage students to read and combine text to obtain scientific information or communicate some aspects of their investigation in their style and format.	Encourage students to read, combine, and evaluate multiple texts to obtain scientific information, or communicate all aspects of their investigation in their own style and format.
	Example: Conclusion provided in the textbook.	Example: Visit this web site. Write up the experiment the in the form of a scientific report, include the following.	Example: Visit these web sites. What conclusion can be reached from the investigation	Example: Poster project on impact of a dam. Find literature about the dam; evaluate the information by comparing studies. Write up the practical investigation in form.

Less   More
Focused on Scientific Evidence
Student Directed and Collaborative

Table 2. Frequencies and percentage of inclusion of each level of science practices in 292 analysis units of the matter and material knowledge area in a physical science textbook.

Frequencies (%)								
Knowledge area	Level	Questioning	Modelling	Planning	Analysing	M & C Thinking	Explaining	Argument	Communicating
Matter and Material	1	**29(9.9)**	1(0.3)	0(0)	0(0)	1(0.3)	**127(43.5)**	1(0.3)	1(0.3)
	2	0(0)	**52(17.8)**	**5(1.7)**	1(0.3)	**16(5.5)**	5(1.7)	**4(1.4)**	**4(1.4)**
	3	0(0)	17(5.8)	1(0.3)	**3(1.0)**	1(0.3)	12(4.1)	1(0.3)	1(0.3)
	4	0(0)	4(1.4)	0(0)	0(0)	3(1.03)	2(0.7)	0(0)	0(0)
Total		29	74	6	4	21	146	6	6

The result shown in Table 2 indicates that although all of the 8 practices could be identified in the textbook, the majority of practices were presented at the low levels in the textbook. At Level 1, Explanation practices have the highest frequency (127, 43.5%), followed by Questioning practices 29 (9.9%), and over the half of the analysis units involved these two practices at the lowest level. At Level 2, Modelling (52, 17.8%) and Maths and Computational thinking (16, 5.5%) were the most frequent included in the textbook. On the other hand, the least frequent practices were Planning (6), Argument (6), Communication (6), and Analysis (4). Although Analysing practices were found in only 4 units with highest frequency at Level 3, the other three were at Level 2.

5. Discussion

The developed rubric that included 8 practices, 4 levels of each practice, and descriptions with examples for the levels made the combination of both content knowledge and skills clearer compare with the five essential features of inquiry-based learning used in the previous studies (Aldahmesh et al., 2016). Hence, it was found to be feasible for analysing science textbooks for inclusion of science practices because it has been practically used by three science education experts in the field of scientific inquiry research. The textbook analysis indicated that inclusion of science practices in this particular knowledge area (matter and material) in the Grade 10 physical sciences textbook is at lower level. This means the activities are mainly teacher-directed and learners have less autonomy in learning of science. The findings also suggest the science practices should be made clearer in the curriculum and textbooks, and publishers should modify the Physical Sciences textbooks to integrate high levels of science practices as recommended in the Science Standards and National Curriculum Statements (South Africa).

6. Conclusion

Learners' understanding of science concepts and ideas requires appropriate engagement in the science practices. Hence, this paper has described the development and validation process of a rubric designed for analysing science textbooks for inclusion of science practices, followed with the use of the rubric in a preliminary analysis to confirm the feasibility of this rubric developed in analysing textbooks.

References

Aldahmash, A.H., Mansour, N.S., Alshamrani, S.M., & Almohi, S. (2016). An analysis of activities in Saudi Arabian middle school science textbooks and workbooks for the inclusion of essential features of inquiry. *Journal of Research in Science Education*, *25*(6), 1761-1793.

Asay, L.D & Orgill, M. (2010). Analysis of essential features of inquiry found in articles published in The Science Teacher, 1998-2007. *Journal of Science Teacher Education,* (21) 57-79.

Council of State Science Supervisors. (2002). Rubric for evaluating essential features of facilitating classroom inquiry. Available online :< www.inquiryscience.com/documents/instructionR.pdf>

Crawford, B.A (2014). From inquiry to scientific practices in the science classroom. In LG Lederman & SK Abell (eds.). *Handbook of research on science education*, (pp.515-544) New York: Routledge.

Department of Basic Education (2011). *Curriculum and assessment policy statement: Grade 10-12 Physical Science.* Pretoria: Government Printer.

Dunne, J., Mahdi, A., & O''Reilly, J. (2013). Investigating the potential of Irish primary school textbooks in supporting inquiry-based science education (IBSE). *International Journal of Science Education*, *35*(8), 1513-1530.

McNeill, K. L., Katsh-Singer, R., & Pelletier, P. (2015). Assessing Science Practices. *Science Scope 1,* 21-28

National Research Council. (2000). *Inquiry and the national science educational standards*. Washington, DC: National Academy Press.

National Research Council. (2012). *A framework for K-12 science education: practices*, *crossing concepts, and core ideas*. Washington, DC: National Academies Press.

NGSS Lead States. (2013). *Next generation science standards: For states, by states*. Washington, DC: National Academies Press.

Niaz M., & Maza A. (2011). *Nature of Science in General Chemistry Textbooks*. SpringerBriefs in Education, *2,* 1-13. dio.org/10.1007/978-94-007-1920-0_1.

Stavros, T. (2016). The scientific practices on the science's textbook in the fifth grade of Greek primary school. *American Journal of Educational Research, 4* (14), 1008-1014.

Ramnarain, U. & Chanetsa, T. (2016). An analysis of South African Grade 9 natural sciences textbooks for their representation of nature of science. *International Journal of Science Education, 38*(6), 922-933.

Ramnarain, U. & Hobden, P. (2005). Shifting South African learners towards greater autonomy in scientific investigations. *Journal of Curriculum Studies, 47*(1), 94- 121.

ATTRACTING TALENT: INTERNATIONAL STUDENTS' TRAINEESHIP PROGRAM. A PROPOSAL

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Abstract

European Commission's long term initiatives to promote international education of students and teaching and administrative staff such as Lifelong Learning Program (2007-2013) or the current program Erasmus + (2014-2020), have allowed participants (specially third-level students) to give an added value to their educational background, not only for study purposes but also in relation to the opportunity to have a traineeship in a foreign country. In fact, the Erasmus + Key Action 103 (KA103), applied since 2014, covers study and traineeship periods abroad as a result of the relevance that traineeships in Europe acquired during the 2007-2013 program period, which managed traineeships abroad as a distinct and minority program. The case of the University of Almería (Spain) results of particular interest: its strategic plan for internationalization includes as one of the main objectives to increase the number of local students to have a traineeship in a European country, a program which has been developed for fifteen years now. However, the increasing demand of local companies and even several University departments and services to host international trainees has triggered a redesign of its internationalization policy and focus on approaches also aligned to internationalization at home. This paper will explore and assess the proposal of a specific traineeship program for international students in order to attract foreign talent to local companies and also to several departments and services of the University of Almería. It will provide the different strategies to implement this program, its management and the possible outcomes for the key actors.

Keywords: Erasmus +, lifelong learning program, internationalization, traineeships, internationalization at home.

1. Introduction

The term "employability" might be described as the group of qualities and competences required owned by an individual to meet the changing needs of the labor market, which promote that individual to be employed and progress in terms of personal and career development (Lindsay, 2009). Employability conditions the professional development of students (Ishengoma and Vaaland, 2016), a factor that is affected by the work experience acquired by university students before and just after finishing their university studies, that is, their pre-graduate and post-graduate experience. Internships or traineeships allow companies to test potential full-time employees and they are also the best means to provide students and newly graduates with their first contact with the job market and the possibility to develop non-formal skills such as teamwork or leadership.

The European Commission and, in particular, the Education, Audiovisual and Culture Executive Agency (EACEA), has been fostering the mobility of students of all education levels as well as exchange programs for teaching and administrative staff through programs such as the European Voluntary Service (EVS) and, specially, through the Lifelong Learning Programme, or LLP (2007-2013) and currently, the Erasmus + Programme (2014-2020). The former LLP devoted specific funding for the mobility of newly graduates from vocational and tertiary education to have a traineeship in a European country, named Leonardo da Vinci. The University of Almería has been beneficiary of these projects from 2002 and was able to send 202 newly graduates during the length of the LLP. After the implementation of the Erasmus + Programme, the mobility of university students and newly graduates was integrated within the Key Action 1 and the program regulations limited the development of the traineeship no later than a year after the completion of student's university education. Not only this time restriction has triggered the rise of applications from local students to a foreign country, but also from international students to have a

professional experience in Almería. This paper aims at describing the response of the University of Almería to the demand of local traineeship addressed to international students and the design of a specific program. After that, this paper will look at possible outcomes of this program which is currently at its initial stages and implementation.

2. The demand of local companies: a pilot project

Internationalization of higher education is one of the main concerns of universities around the world. The international involvement and presence of educational institutions continue to progress. Measuring the process and activities is seen as a way to improve practices and ensure more comprehensive offerings. One of the strategies that has gained momentum in the past few years is Internationalization at Home (IaH). This strategy seems to have impact not only in mobile students, quite the contrary, it requires a compromise from universities to readapt the academic curriculum and reflect on the interactions between local students and international students.

The first aspect that was noticed at the International Office in relation to the development of traineeships in the city was the rise of contact from local companies which showed interest in hosting international students. From some sporadic contacts during the development of the Lifelong Learning Program from 2007 to 2013, to more than thirty applications in the timespan 2014-2016, the University of Almería realized that the collaborative relationship formerly established with local companies would be an asset to design and implement a new mobility program. It was determined that, in order to design a competitive program to attract international talent, it would be necessary to learn about the actual demand of local businesses that might be interested in participating in the program. In close collaboration with the Careers Service, an informative email was sent to fifty five local companies with more than twenty five employees and which had established – or were in the process of – contacts with companies from other countries. It must be mentioned that the economy of Almería is mostly based on the industry of agriculture and tourism, so the number of companies with international interactions is noticeable.

The response from the contacted companies was as follows: twenty-five companies replied to the informative email asking for more information on this mobility program. Therefore, it was decided to implement a pilot project to test the viability of this project. A form was sent to five companies selected among the twenty five which showed interest in the program, in which they would have to detail the profile of the candidate they were looking for. The profiles requested were mostly related to business administration, marketing, accounting and languages. The information received was translated into English shared between all international universities with whom there was a mobility agreement previously (for programs such as KA103 or KA107). These offers were also published in internet portals such as ErasmusIntern (www.erasmusintern.org) which is very well-known among university students looking for traineeships abroad. More than ten applications per offer were received while the application process was open and, since the International Office acted as a facilitator, the final selection of candidates were made by each company after having a video or telephone interview. Considering that there was not any specific funding for the development of this program, only those candidates who demonstrated being eligible for an Erasmus + KA103 grant for traineeships were taken into consideration. This aspect was also important in terms of the legal framework of the student in the host companies: students train under the signature of a specific agreement signed by all parties involved and they have an insurance during the whole traineeship period, which is paramount for host companies.

3. The design of the program

"Train in Almería" program was designed by taking as model the mobility program implemented by the Italian university Universitá degli Studi di Sassari because they had a holistic approach to all aspects related to the international experience of incoming trainees, something that our pilot project lacked and needed attention. First of all, it was decided to address the program to two separated potential host organizations: on the one hand, it was agreed to include all local companies with more than ten employees and, on the other hand, it was also agreed to address this program to all administrative services and departments of the institution. This was a key feature to implement the program properly and to count with the implication of all departments of the university. In relation to the periodicity of the traineeships, there would be two calls for applications sent to companies and university services: the first one would be in May for traineeships starting during the first semester (from September to mid-February), and a second one in October for those traineeships starting during the second semester (from mid-February to end June). It must be mentioned that traineeship must not take less than two months.

The promotion of traineeship offers among international students was an aspect to consider carefully and a promotion strategy had to be designed: it had to be considered how to reach international students and create an interest in choosing Almería as their destination to have their first contact with the labor market. Likewise, a plan to promote the program among local companies had to be considered. For the first target group, potential students, a specific section in the website was devoted to them with information on how to apply, the city of Almería, accommodation, the international students association (ESN) and orientation on what to do before, during and after the mobility. The use of social networks, as well as regular contacts with international partner universities informing about new internship offers would trigger a higher number of applications. For the second group, potential local companies, it was considered the organization of several informative meetings to promote the program among partners before each call for applications is open. The visit to companies of particular interest (e.g. large companies with international branches) is also projected. Meetings focus specially on the benefits host companies would obtain after participating in the program. Partner companies will also have a specific section in the website of the program with information on how to apply and the documentation needed. It has also been envisioned the inclusion of a section titled "Our Partners" in which the list of current participating firms is included; this would appeal other companies to consider their own involvement.

Regarding the management of traineeship offers, the use of the platform Icaro is expected. Icaro is an IT tool developed by the University of Almería in 2001 to manage traineeships and job offers of local students in local companies. The success of this tool has been such in these years that it has been transferred to other eleven Spanish universities. Currently, there are 51,180 companies registered and 189,996 offers posted for local students. Icaro not only allows companies to manage the traineeship offer details and the selection process in real time, but also allows candidates to keep record of the state of their application and their final selection by companies. Similarly, the management of documents necessary for the traineeship (agreement, insurance, mobility certificate) is also managed through this platform.

Once the selection process is finished, students are advised to apply for the Erasmus + KA103 grant in their home universities in order to manage the traineeship agreement and the insurance. Prior to arrival, students would have to do an online pre-departure training (45 hours) designed by the University of Almería. Based on the pre-departure training provided by local students who train in a foreign country, the contents have been adapted for incoming students. The pre-departure training is composed by five units: the Erasmus + KA103 for Traineeships (general information on the program); Practical Aspects of your Traineeship (documents, insurance, funding, recognition and validation); Living in Almería (cultural aspects, accommodation and travel, the University of Almería); Professional Competences (non-formal education such as how to work in groups, how to solve conflicts, the role of the tutor, etc.); Spanish Language (the basics of the language to help students to manage during the first days in the city). Once trainees finish their pre-departure training, they must apply for an appointment with the International Office in order to be welcomed by the staff upon arrival. Students will receive a welcome pack in which a free night in the local hostel is included, and they will be fully registered. Students will also have the chance to enroll in a course on Spanish language at a reduce fare.

In relation the follow-up of the traineeships, students will be contacted twice during the experience in order to fill out an online form with questions related to the development of their traineeship. This will be of paramount relevance to identify the aspects to improve for upcoming calls. By the end of the traineeship, students will receive an official certificate signed by both the host organization and the University of Almería, as well as a transcript of records with the final mark obtained after the experience. The credit transfer to students' home university is expected. Regarding companies and university services involved in the program, a final survey will be requested in order to learn more about the necessities of host organizations for new traineeships.

4. Expected outcomes and conclusion

After an exposition of the background and development of this particular situation and the explication of the design of this mobility program, it is not possible to know the results yet since the program is currently in the process of being implemented. After the first academic year of the program implementation, a qualitative and qualitative report will be made to measure the impact of the program in host organizations (companies and university services), participant students and the degree of internationalization at home of the University of Almería.

However, some results might be foreseen. On the one hand, a rise in the reception of international students is expected. Considering that just sporadic traineeship applications were received before the design of this program and these were not carried out under the framework of a mobility program, it is expected that this new program would appeal not only to those international students who enroll the UAL as exchange students but also to international students who do not know the higher

education institution and the city beforehand. This would also be motivated by the efforts put into the promotion of the program first at an international level, and second, at a local level in order to promote the participation of local host companies and internal services and departments of the university. It could also be foreseen that the establishment of this program would have impact on those aspects that affect the degree of internationalization at home of the UAL, namely the continuous readaptation of the academic curriculum and the ECTS offer in other languages, especially English.

References

Ishengoma, E. and Vaaland, T. (2016). Can university-industry linkages stimulate student employability?. *Education + Training*, 58(1):18-44.

Lindsay, C.D. (2009). *The concept of employability and the experience of unemployment. PhD thesis*. The Business School, Edinburgh Napier University, Edinburgh. Available at: www.researchrepository.napier.ac.uk/3877/1/Lindsay.pdf

EVOLUTION OF DIGITAL BADGES: FROM "MOTIVATIONAL CREDENTIAL" TO HUMAN RESOURCES TOOL

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Abstract

Badges have grown to become the most important micro credential in the education industry. When they were introduced, they were not yet seen as a tool to address the problem of the skills gap.

Most people dealing with Education have heard about digital credentials, certifications, and badges. But today's usage of Badges is only the start: evolution around micro credentials will influence missions and actions of educational institutions and other industries.

We're starting with a summary of what problems were addressed by the introduction of badges, and will explore further their influence for issuers, recipients, and the industry as a whole. Next, we will look at other evolution in the education industry and how badges will have a part in that.

Finally, we're bringing the existing and future processes and approaches around badges together and we'll create an easy-to-manage framework. The purpose is to present a structured approach, which helps educational institutions, employees, employers in general and also Human Resources to close the current skill gaps as fast as possible.

Keywords: Credentials, badges, human resources.

1. Introduction

1.1. Why badges

There are many sources of information about how and why badges got invented:

- Mozilla (Mozilla, n.d.) answers the question for the "why" with "Get recognition for the things you learn; Give recognition for the things you teach; Verify skills; and Display your verified badges across the web."
- (J. Antin, E. Churchill, 2011) looked in 2011 in their Whitepaper very early into the psychological reasons for Badges. They are mentioning "goal setting", "getting clear instructions", "Group Identification", "Status / Affirmation" as the key reasons why badges in Social Media started to have a big success.

1.2. What is a badge

The Information Technology industry led by (IBM, n.d.) introduced badges to measure skills for a certain product. This was motivated by the need to attract, engage and progress talent around the globe. IBM needed to meet its internal workforce needs as well as to ensure that IBMs extensive ecosystem of clients and partners had access to verifiable competencies and skills, thereby boosting their confidence in both IBM technology and talent.

There were many business reasons for IBM to create the badge program. One of the key organizational objectives was to "track skills at the nano-level – by creating a heatmap of critical skills for achievements earned across the globe".

To support the above objectives, IBM created a new credential structure to signal and surface capability in a way that is timely, verifiable, portable, discoverable and differentiating. Digital badges issued in the web standard Open Badge format met these needs. Pearson's Acclaim (now Credly) Open Badge platform with its secure, modern architecture, diverse badge issuing, and management options was selected as the platform to adopt rather than having to recreate a badge and credential platform in-house (Pearson, 2017). IBM has categorized five kinds of digital badges on this platform: Knowledge, Skills, Proficiency, Certified and General. This adds value to traditional certification programs by creating progression activities and issuing continuing education credits, which increase learner motivation and helps build a sustained relationship.

Compared to any other measurement, the success of the badges for IBM is unique (D. Leaser, 2018).

2. Methodology

We're summarizing in this paper important information from literature and internet to give a good overview and we add experience from IBM who created the badge program in the industry (IBM, n.d.).

While presenting the information we'll structure the facts in an easy-to-manage framework. The purpose is to present a reusable structure. This structure in this paper should help educational institutions, employees, employers and Human Resources to easy understand the benefit and limitations of badges. Each group should be able to explore their current and future benefits. Expectation is that this helps to close the current skill gap as fast as possible.

4. Discussion

4.1. Overview

Alternative credentialing like badges are getting more and more meaning in higher Education and while acquiring business skills. A detailed study (Fong, J., Janzow P, 2016) shows two interesting facts everybody need to be aware of: From 2001/2 to 2013/4 the yearly issued alternative credentials in the US nearly doubled. The study also discussed the finding that "some of the millennial generation and other types of learners may favor an educational credentialing system in the form of competency badges or certificates.".

4.2. Perspective of the issuer of badges

The industry is facing the issue of much free training being pushed out. Average vendors are having up to 25% of their skills available free of charge in the market (M. Manning-Chapman, 2017). Motivating users who absorb the free skills to move over to paid skills can be done by digital credentials such as badges. People feel motivated once they have one or two badges (for example after taking some free learning units) and can get motivated to get a third one – even if this means paying. Color coding or levels of badges are adding to the differentiation.

There are clear results for IBM: The introduction of badges did increase the skills in the market. Some statistics show a 100% increase of classes taken by students, dependent on the subject. Of course, this is not representative. But even where the increase is much smaller, there is not a single data point that students took fewer classes.

4.3. Perspective of the receiver of a badge

4.3.1. Recognition. Looking into the benefit of badges, a good summary is "Get recognition for skills you learn anywhere." (I. Buchem, 2015). The chart deck of the talk of (I. Buchem, 2015) also outlines that you earn badges "to show them in the places that matter". Both are key reasons for receivers. Another positive influence for badge receivers is the guiding function: "viewing a list of possible badges, users come to understand individual valued activities" as outlined by (J. Antin, E. Churchill, 2011)

4.3.2. Universities. In 2016 the first Universities started to build a concept on badges to bridge skill-gaps. They even used the same terminology that we're using in this article (Converge, 2016).

The latest evolution of Universities is led by Northeastern and IBM: Northeastern is accepting certain badges from IBM (Northeastern, 2017) for academic credit. There are discussions of other Universities and Vendors implementing similar approaches.

4.4. Influence of badges on the industry as a whole

4.4.1. Labor market insights. Acclaim's labor market insights (Acclaim, 2018) is taking the benefit of badges one level further: with Labor Market Insights, Acclaim provides labor market insights once you have achieved a badge. This means the owner of a badge can see how many open positions exist in a region or industry.

We can assume that this will significantly change the labor market: once there is a certain amount of open positions in an area they'll get filled significantly faster than in the past. The disadvantage will be visible, too: once you're looking as an employer for skills that are representing a

niche it is less likely you'll get them filled. Of course, there is also a chance somebody is looking dedicated for niches. Overall, we can state that this new approach is much more than (J.Antin, E.Churchill, 2011) thought of in 2011.

4.4.2. Talent Match. "Labor market search" (4.4.1) is the newest approach where badge holders can actively search and judge how to get into new roles. The opposite approach also exists since 2018 as well: IBM is piloting what is called "Talent Match" (Talent Match). "Talent Match" is giving an employer the chance to search for the holders of a certain badge. The search not only returns numbers per country, but even allows the employer to contact the badge holder. Of course, the badge holder must agree to get contacted, and even in the case he agrees the contact is anonymous: The badge holder gets a request from the company and can decide to respond, but the company doesn't get the details of the badge holder.

5. Conclusion

5.1. Overview

The industry started to issue badges with the focus on individual learners, and the purpose was to help closing the "skill gap" (D. Leaser, 2015), but of course also drive skills from the vendor issuing the badge. This means these were two very good reasons. As the challenge of the skill gap being a global challenge, we can judge that trying to use badges to close it was a very good idea.

As we see in (4.3.1) it is a fact that badges are helping to guide individuals, and as we have seen in (4.2) the number of absorbed classes by individuals did increase where badges were issued.

We now know that the initial idea why badges were started to get introduced is more than fulfilled

5.2. Outlook

We're in the middle of an evolution where an end is not yet visible. Let's have a look to the timeline. Badges are issued since more than five years, but for 3 years the increase in badges in the industry is significantly growing. In 2017 the first time Universities started to accept badges as part of their own teaching (4.3.2) and increased with this approach significantly the meaning of badges for individuals.

At that time, it became clear that the initial approach of helping individuals to find the right learning to close the skill gap was just a starting point.

In 2018, badges have seen the next evolution: instead of supporting individuals badges are now starting to revolutionize recruiting and Human Resources. As we have seen in (4.4.1) and (4.4.2) recruiters can start using badges to actively find the right skills in a country.

This small step is a revolution if you're thinking that in the history of mankind it was always the individual who worked on their skills and degrees, and then approached employers. Now we're seeing for the first time that employers can become active. They can approach talent; they can recommend additional learning. Imagine that companies can monitor possible future workforce and their skill evolution already years prior to hiring, influence them by additional badges.

And even the upskilling after hiring is no longer needed: after a signature a future employee can on his own continue to get the required badges from his future employer and on the 1st working day start his work.

5.3. Limitations

One of the limitations today is the fact that the user of badges is not verified. Thinking of employers needing verified credentials this is not enough. There is currently no direct work underway to change this. And we also need to ask how important this really is. Even with all of us being used to verifiable credentials like university degrees etc. the question is what would happen if we're applying for a job and somebody did lie about a credential. Who could afford losing a job because he lied about his credentials? On the other hand, we also need to see the side of the employer: who is responsible for damage because somebody could cheat on his credentials while getting hired? Don't you want to be sure that the pilot in your next flight has verified credentials? It seems there is not a fully clear answer to the question today.

But there is also a possible scalable solution: Certificates can be delivered in a secure way online (Pearson, n.d.,). This allows for example to build a curriculum or learning path by using badges as needed to split the program into smaller chunks. This keeps the user motivated. He sees progress. At the end a formal remote certification is added (Pearson, n.d.,), that shows to future employers that this is a verified credential. This could be a good mix of badges and verifiable credentials.

References

Northeastern, 2017, "Northeastern University And Ibm Partnership First To Turn Digital Badges Into Academic Credentials For Learners Worldwide", https://news.northeastern.edu/2017/09/northeastern-university-and-ibm-partnership-first-to-turn-digital-badges-into-academic-credentials-for-learners-worldwide/, May ,20th, 2018.

Converge, 2016, "Micro-Credentials Offer Universities an Opportunity to Bridge Skill Gaps ", http://www.centerdigitaled.com/higher-ed/Micro-Credentials-Offer-Universities-an-Opportunity-to-Bridge-Skill-Gaps.html, May ,20th, 2018.

Pearson, n.d., "Testing outside a test center", https://home.pearsonvue.com/Test-Owner/Deliver-your-exam/Testing-outside-a-test-center.aspx, May ,20th, 2018.

J.Antin, E.Churchill, 2011, "Badges in Social Media: A Social Psychological Perspective", CHI 2011, May 7–12, 2011, Vancouver, BC, Canada. ACM 978-1-4503-0268-5/11/05.

Pearson, 2017, "IBM employs digital badges to attract, engage and progress talent across the globe", Whitepaper, Pearson.

Acclaim, 2018, https://www.youracclaim.com/acclaim-lmi, https://www.youracclaim.com/acclaim-lmi, May ,20th, 2018.

Fong, J., Janzow P., & Peck K., 2016, "Demographic shifts in educational demand and the rise of alternative credentials", INSTR14097-16804 06/16

Ilona Buchem, 2015, "Open Badges for Individuals and Organisations", https://www.slideshare.net/ibuchem/open-badges-for-individuals-and-organisations, May, 20th, 2018.

Mozilla, n.d., "Why open badges?", https://support.mozilla.org/en-US/kb/why-open-badges, May, 20th, 2018.

IBM, n.d., „IBM Digital Badges", https://www-03.ibm.com/services/learning/ites.wss/zz-en?pageType=page&c=M425350C34234U21, May, 20th, 2018.

D. Leaser, 2018, "IBM wins ATD Excellence in Practice Award for its digital credentials program", https://www.ibm.com/blogs/ibm-training/ibm-wins-atd-excellence-practice-award-digital-credentials-program/, May, 20th, 2018.

M. Manning-Chapman, 2017, "Designing A Free-to-Fee Offer Strategy for Education Services" http://blog.tsia.com/blog/designing-a-free-to-fee-offer-strategy-for-education-services, May, 20th, 2018.

IBM, 2018, "Talent Match", https://www-03.ibm.com/services/learning/ites.wss/zz-en?pageType=page&c=R035159C60850Z79, May, 20th, 2018

D. Leaser, 2015, "The Talent Gap: If it is real, what can you do?", https://www.ibm.com/blogs/ibm-training/the-talent-gap-if-it-is-real-what-can-you-do/, May ,20th, 2018.

COMMUNITY SCHOOLS: BRIDGING SCHOOLS, FAMILIES, AND THE COMMUNITY TO ENHANCE STUDENT ACADEMIC SUCCESS

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Abstract

Community schools, which are also referred to as "full-service" or "extended service" schools, provide students residing in poverty stricken areas additional services that extend beyond the traditional educational setting. Providing students support beyond educational services has become more significant due to the importance placed on bridging interconnected support systems to enhance student performance. Indeed, Varlas (2008) contented that "research has shown a strong correlation between areas with high levels of poverty, crime, and mobility and low student achievement" (para 7). Community schools are becoming more commonplace particularly in countries such as the United States in which more emphasis is being placed on providing a wider range of services to its learners. In fact, Min, Anderson, and Chen (2017) proclaimed that community schools are one of the most popular and rapidly growing educational models. Moreover, initiatives to broaden educational services beyond academic standards can be found worldwide in countries such as England, Sweden, Ireland, Sri Lanka, and Afghanistan (Varlas, 2008).

The goal of full service community schools is to enhance learning by extending the types of services that are available to students and their families (Kronick, 2005). Particularly, community schools are designed to provide coordinated services that include supports and programs such as medical care, food aid, and the inclusion of enrichment activities. Specifically, community schools are structured to increase student achievement gaps through providing a range of services that include vital student support via social services, parental outreach, and healthcare providers (Horn, Freeland, & Butler, 2015). The collaborative partnerships that are created among the school, parents, and community has been found to be a more effective approach to student learning and development (Epstein, 2011).

Research focused on community schools have resulted in positive outcomes demonstrating that they provide integrated student supports, expanded learning opportunities, enhanced community and family engagement, and that they provide collaborative leadership and practices (Serrette, 2016). In community school contexts, students are afforded the opportunity to receive mentoring experiences, learning opportunities focused on conflict resolution and student advocacy, and engaging interactions focused on college and career possibilities. Further, through a community school model, educators, parents, community leaders, and community social and healthcare providers are able to learn how to collaborate effectively to ensure that a full range of benefits are provided to students to yield higher learning outcomes (Lawson & van Veen, 2015). Research focused on community schools and their impact worldwide will be presented.

Keywords: Community schools, community engagement, poverty, school readiness, academic enrichment.

References

Biag, M. & Castrechini, S. (2016). Coordinated strategies to help the whole child: Examining the contributions of full-service community schools. *Journal of Education for Students Placed at Risk, 21*(3), 157-173.

Epstein, J. (2011). *School, family, and community partnerships: Preparing educators and improving schools* (2nd ed.). Boulder, CO: Westview Press.

Horn, M., Freeland, J., & Butler, S. (2015). Schools as community hubs: Integrating support services to drive educational outcomes. *Economic Studies at Brookings.* Retrieved from https://pdfs.semanticscholar.org/036f/46ea445a82764c56547bfbdb49f784a0fb79.pdf

Kronick, R. (2005). *Full service community schools: Prevention of delinquency in students with mental illness and/or poverty.* Springfield, IL: Charles C. Thomas Publisher, LTD

Lawson, H., & van Veen, D. (2015). A framework for planning and evaluating the new design. In H. Lawson and D. van Veen (Eds.) *Developing community schools, community learning centers, extended service schools and multi-service schools* (pp. 50-76).

Min, M., Anderson, J., & Chen, M. (2017). What do we know about full-service community schools? Integrative research review with NVivo. *School Community Journal, 27*(1), 29-54.

Serrette, K. (2016). Community schools: Transforming struggling schools into thriving schools. *The South Carolina Education Association.* Retrieved from https://www.thescea.org/wp-content/uploads/2017/06/The-SCEA-Community-School-Proposal-K-12-Equity-82317-J-Lawson.pdf

Varas, L. (2008). Full service schools. *ASCD Info Brief.* Retrieved from http://www.ascd.org/publications/newsletters/policy_priorities/summer08/num54/full/Full-Service_Community_Schools.aspx

Workshops

LIVE2WORK PROJECT: METHODOLOGY FOR A LIFE PROJECTS INTERVENTION DEVELOPED FOR PEOPLE IN PROFESSIONAL VULNERABILITY

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[3]MYO - Mind Your Organisation (Denmark)

Abstract

This workshop aims to present a socially relevant and scientifically sound methodology for a life projects intervention with young adults and adults (18-30 years) in situations of professional vulnerability, including migrants and refugees – the Live2Work Project. Among other resources (e.g., the theoretical handbook, the course guide, the in-service training courses, the online audio-visual learning scenarios, the Moodle courses and the on-line learning platform), the project provides a toolbox composed of innovative and easy-to-use pedagogical resources. Its major goals are to contribute to the development of healthy and satisfying life/career trajectories by expanding the access of individuals to educational, training and professional paths, in their new countries. The toolbox was developed considering a three-dimensional scheme that includes the personal, contextual and temporal dimensions, as well as a change dimension based on transition skills training. Some activities that integrate the toolbox, in particular those related to the clarification of self-concept and development of self-esteem, will be tested through "My Values: Image Cards" and "My Strengths: Solitaire". This workshop is aimed at end users who work directly with this target audience, namely trainers, mentors and advisors (max. 12).

Keywords: Live2Work Project, life projects, professional vulnerability, young adults, migrants and refugees.

1. Live2Work project presentation

The Live2Work Project has the following objectives: (i) training technicians with the necessary knowledge, skills and intervention strategies to assist late teens and young adults that are professionally vulnerable building their life projects, (ii) creating/ adapting/ reinventing the tools supporting the training of these technicians, which will prepare them for intervention with the target group, and (iii) promoting the use of these tools - as they help people to identify, acquire and transfer skills developed by means of (formal and non-formal) learning processes throughout their lives. The project's goal is to increase the odds of social and professional integration for migrants and refugees who are between 18 and 30 years old. This project is a methodological proposal for technicians working with large groups that share similar needs; it has a scientifically based and well-organized set of activities (flexible enough to accommodate specific requirements) that can be implemented at a very low cost by different institutions/ users, since its materials will be disseminated at no cost through online platforms. The entire project encompasses the following six outputs: the handbook of the project's conceptual frame, a toolbox with materials and activities, a course guide for technicians, a study pilot and training workshops, audio-visual materials and a Moodle platform.

2. Exploring output 2: toolbox

The toolbox and related materials are organized into four distinct dimensions according to the principal models and theoretical references that support the theoretical rationale of the developed intervention (e.g., Super, 1990; Gottfredson, 2005; Greenhaus, Callanan's, & Godshalk, 2010; Pinto & Taveira, 2011; Patton & McMahon, 2006; Coyne & Cook, 2004; Fouad & Bingham, 1995; Leong & Hartung, 2000). First dimension concerns self-knowledge and is oriented to help participants clarifying their self-concept and developing their self-esteem. The second dimension relates to world knowledge. It is designed to help satisfy the participant's curiosity and help him/her explore educational, training, and professional opportunities, as well as identify social support networks. The third dimension, concerns transitional skills, a set of abilities necessary for changing from one's current situation to the desired

situation. Finally, the fourth and last dimension concerns decision making and helps the participant outlining objectives and implementing an action plan that increases his/her chances of successfully achieving his/her goals. In addition to the aforementioned four modules, another extra activities are included: two related to the contractual agreement, and which precedes any intervention, and two that allows the participant to review a summary of his/her intervention path. Table 1 presents all dimensions and their respective activities included in the toolbox.

Table 1. Toolbox structure: dimensions and related activities.

Dimension	Activities and Tools
Pre tools	Activity: 1A Individual Contract or Activity: 1B Group Contract
Self Knowledge	Activity: 2 My Values – Image Cards Activity: 3 My Life Values by Self-Assessment Activity: 4 Character Strength Cards - Solitaire Activity: 5 Strengths by Storytelling Activity: 6 VIA Online Assessment Activity: 7 Strength Spotting Interview
World Knowledge	Activity: 8 Self-Assessment for exploration of interest – Steps to identify future career paths Activity: 9 Competence Tree Activity: 10 Exploration of Occupations Activity: 11 Mapping Network Relations (step 1) Activity: 12 Identifying Role Models an Support (step 2)
Transitional Skills	Activity: 13 Learning Positive Emotions Activity: 14 Learning the Power of Thoughts – The Diamond Activity: 15 Challenging Thoughts, Core Beliefs and Build Optimism Activity: 16 Perceptions Activity: 17 Time Management
Decision-Making	Activity: 18 Goal Setting Activity: 19 Goal Setting – Anchoring the goal
Wrap up tools	Activity: 20 Anchoring Learnings, Decisions and Goals – Wrap up each activity Activity: 21 My Project Sum up

2.1. The importance of exploring self-knowledge: Values and strengths

Life values express the beliefs and principles that guide people's lives, thus influencing their behaviours, emotions, thoughts, decisions and life styles. Values act as anchors that initiate, guide and maintain motivated behaviour towards the achievement of personal and significant objectives. Well defined values are essential to define goals that are coherent with the type of person one wants to be and with the life style one is pursuing.

As to strengths, they are "Values in Action", which allow everyone to deal efficiently with tasks, activities and steps necessary to accomplish his/her goals, even when confronted with obstacles. Those who are conscious of their strengths often have higher levels of self-esteem, confidence in themselves, energy, resilience, and are more committed to and more capable to achieve their goals; they also have better performance and experience less stress.

In the next two entries of this section we describe in detail how the two activities are administered; one relates to the exploration of values, the other to the exploration of strengths.

2.1.1. "My Values – Game of Cards".
This activity can be applied individually or in group, up to a maximum of 12 participants, conceived to last about 45 minutes. Participants will engage in a supervised self-reflection through the exploration of their fundamental life values. For this purpose, the supervising technician must initiate the session introducing the participants to the concept of life value. The technician keeps at all times a "supporting file", which consists in a paper sheet where several value definitions are printed. Next, the activity sheet is distributed to everyone and participants are organized in pairs. The sheet contains the instructions for the participants' performance and fields to be filled out by the participants with information that will be requested by the technician during the activity. Upon this initial preparation, the technician will spread 64 value cards on the table (or on the floor) in such a way that they are all equally visible to the participants. The participants will be asked to choose two cards that can relate to something they have experienced, a story or a positive event of their past. It is very important to stress that the experience to be remembered must be a positive one. After that, each participant should be encouraged to share his/her experience within the pair and register the key-reflections about the values

selected in the activity sheet. In the next round, each participant chooses two new value cards, only this time they must select cards representing important positive values in their present time. Again, they are encouraged to share their experiences and register the key-reflections as before. At this point participants should be asked to look for possible connections between the past and present experiences and then register their reflections on the activity sheet. Finally, the participants are asked to select one card that may represent a value for their future life. Again, they will be asked to reflect, as always within their pair, on how this value will likely influence their future. To conclude the activity each participant should make a group presentation about his/her chosen three positive experiences (past, present and future) and respective associated values.

2.1.2. "My Strengths – Solitary Game". This activity can be applied individually or in group, up to a maximum of 12 participants, and conceived to last approximately 45 minutes. Participants will be encouraged to make a self-reflection after exploring their strengths, potentials and resources. The supervising technician must start the session with an introduction on the concept of strength and make sure that all participants understand it well and are capable of using it while performing this activityThe technician will then distribute to each participant a total of 24 cards (corresponding to the 24 strengths) and the accompanying activity sheet. After this initial preparation the technician will ask participants to focus on whichever strengths they rely on their daily lives to feel happier, energize themselves, feel more confident, motivated and fulfilled, and boost themselves toward better achieving their goals. Participants should start by screening all 24 cards and then order all of them in a "more like me" (strength I am certain to have) to a less like me" (strength I am less certain to have) sequence. All participants are required to choose at least 5 to 7 strength cards that best characterize them. To conclude this activity, participants will be asked to tell the group which main strengths they have and explain why they have sequenced them the way they did.

3. Feedback on the administration of these activities

The above activities were administered to professional technicians that work directly with the target-group, in pilot-studies applied in Portugal, Denmark and Czech Republic. These technicians already had the chance to try the same activities with late young adults that face professional vulnerability, including migrants and refugees. All technicians agreed these activities were easy to prepare and administrate, and all participants expressed the same opinion as to how easy they were to interpret. The utilization of images and cards – visual communication tools- help people to overcome language barriers and are even the easiest way for the participants to let their guard down, making it easier for them to share their personal information with others.

References

Coyne, R. K., & Cook, E. P. (2004). Understanding persons within environments: An introduction to ecological counselling. *Ecological counselling: An innovative approach to conceptualizing person environment interaction*, 3-35.

Fouad, N. A., & Bingham, R. P. (1995). Career counselling with racial and ethnic minorities. *Handbook of vocational psychology: Theory, research, and practice*, *2*, 331-265.

Gottfredson, L. S. (2005). Using Gottfredson's theory of circumscription and compromise in career guidance and counselling. *Career development and counselling: Putting theory and research to work*, 71-100.

Greenhaus, J. H., Callanan, G. A., & Godshalk, V. M. (2010). Career management (4th ed). Thousand Oaks: Sage Publications, Inc.

Leong, F. T., & Hartung, P. J. (2000). Adapting to the changing multicultural context of career. *The future of career*, 212.

Patton, W. A., McMahon, M. L., & Watson, M. B. (2006). Career development and systems theory: Enhancing our understanding of career. In *Career psychology in the South African context* (pp. 65-78). Van Schaik Publishers.

Pinto, J. C. & Taveira, M. C. (2011). Abordagens à carreira na vida adulta: estudo de avaliação de um modelo de intervenção [Approaches to careers in adult life: an evaluation study of an intervention model]. In M. C. Taveira (Coord.) Estudos de Psicologia Vocacional: Readings [Vocational Psychology studies]. Coimbra: Almedina.

Super, D. E. (1990). A life-span, life-space approach to career development.

ROLE PLAYING GAME: A TOOL TO APPROACH SOCIAL RELATIONSHIP IN THE CLASSROOM

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Abstract

Games are an optimal way for children to express themselves and develop new conceptual understandings. In the 21st century, students have different kinds of learning needs; both cognitively and emotionally. This workshop aims to offer Role Playing Games (RPG) as a way to cultivate all students in developing a sense of community and empathy which has been shown to improve overall learning.

RPG helps students transform themselves into a character that they chose. In character, children will speak their minds and give ideas without fear of being personally rejected; thus, supporting students in building community through their avatars. By the end of the workshop, participants will understand how the game works, and how to connect RPG with their area. They will be able to start their own RPG baseline story and develop their own games. The examples and data presented were derived from a workshop that transform into daily practice during Spanish class at an elementary school in Cali, Colombia.

The session will begin with an explanation of the purpose and practice of RPG for students, teachers, and counselors. Then participants will play a short RPG. Finally, the procedures of how to create a game will be given, and participants will be able to comment or ask questions about the game, its uses, and applicability.

Keywords: Role-Playing, games, expression, creativity.

1. Introduction

Role Playing Games (RPG) are events in which the participants, (students in this case), adopt the roles of characters in an imaginary scenario. Players perform the actions of their characters by talking or acting out possible solutions to the situation given by the Master (person who directs the session). The decisions players make are based on the coherence of their story, their character´s abilities and the roll of the dice.

RPG can be used as a tool to support building social relationships within the classroom. These relationships contribute to the development of creative problem solving skills as well as the development of socio-emotional relationships. Research has shown that when play is recognized as a valid pedagogical approach it helps students deeply in their learning process by producing new knowledge and solving diverse situations, as well as in their whole personal growth by means of relationships, interactions, and emotional contexts of learning. (Kobylak, Kalyn, 2017)

Children find opportunities to explore and express their personalities through RPG. It is suggested by researchers that play nature is not superficial and is metaphorical; while the outside and inside sensibilities fuse, the child´s outer reality is permeated by the inner imagination, when this happens and everything works as a whole, the alignment and coordination of the different children´s capacities take place, some of these capacities being the social, emotional, cognitive, imaginative among others. (Marks-Tarlow, 2014). During the RPG sessions, students can find a new way to establish relation among pairs and find new ways of expression of their feelings at a different level than the daily class routine.

RPG supports academic knowledge when used and aligned to the content of a specific subject. When students find themselves located in these RPG situations, they will happily use the academic knowledge in order to solve them, and review other students' solutions under the same criteria. The integration of RPG in the literacy curriculum has been a major step in the use of games for the comprehension in students of certain stories or literary concepts. Researchers suggest teachers should connect the curricula with the literacy-enriched play centers instead of experiencing play as an isolated

activity. Integrating playing and curriculum will increase the probabilities students have to practice and improve important literacy concepts and skills. (Christie, Roskos, 2013).

2. Objectives

It has been suggested that learning and play are facets that nourish one another and might seem inseparable; this is part of the experience children live through games, and helps them create awareness of their surrounding world in a permanent process. (Pramling, Johansson 2004). Depending on the subject area, applying RPG in the classroom can change the content, but never the emotional benefit in creativity and academy. In our Spanish class situation, the objectives were: To enhance the literacy in order to teach a literary style or story, and to improve their argumentative skills. One of the most important benefits discovered was how students that might struggle socially finally found their voice and expressed it through character.

3. Design

The design process of a RPG begins with the recognition of the learning goal.
- What academic skill are we aiming for?
- What kind of characters can we use?

Then we must set the baseline:
- What is the general situation of the game?
- Where are the players going to begin and end (the goal)?
- What kind of different situations are they going to solve along the way?

Once the game is established, it is important to embrace the fact that students are free to make their group decisions. Teachers only can interfere if they are being disrespectful amongst each other, or if there is an argument too difficult to settle. In that case, teachers must ideate how to reach an agreement, but never solve the game problem for them. It has been suggested by researchers that the raw creative thinking ability leads to the creation of original ideas, and applied to a specific domain, the result of it may be higher order ideas or higher achievements in the mentioned domain. (Milgram, Hong, 1999). When students create solutions to advance in RPG, their creativity requires the use of prior knowledge. During the game and depending on the action the group wants to take, the master gives a value to each number of the dice, so when the group rolls the dice, it defines the result of their decision. Creativity nourishes from knowledge and at the same time builds upon it

During the game characters must work together in order to succeed. Research have shown that being in character, promotes the abilities for communication and conversation as well as taking perspective and controlling impulses by taking turns. It also develops competence when solving social problems, convincing others, making commitments and persuading, negotiating, compromising and collaborating as a team. (Sawyer, 1997). After a couple games the students discovered a simple truth about the game: The dice are the rulers of the game, there is no way to change that, but the Master gives value to the numbers in the dice depending on the situation. Odds of being successful are greater when the decision the group makes helps the whole class than when it is a selfish action. Once the students understood that, they are able to make the smarter moves and improve their chances in winning. The most difficult part for students is comprehending that leaving yourself behind for the greater good rewards the team extra benefits. This comprehension is the moment when the game truly becomes a tool for building social relationships in the classroom.

4. Methods

The sample population was from Colegio Bolívar (CB), a private school in Cali, Colombia. This bilingual school is strongly influenced by the U.S.A in its teaching. The school is divided in 4 main areas: Preprimary, Elementary, Middle, and High school. Each section has a main principal.

The Elementary section is composed by:
- Grade levels from second to fifth grade, 5 classes per level, approx. 20 students each.
- An English speaker Homeroom teacher per class. (9 of them Colombian, 11 foreigners)
- One Spanish teacher per grade level. (All Colombian)

During the school year, 2017-2018, the Spanish team in Elementary was interested in the RPG experience as part of their class. The schedule included one class period per week for a month with each grade level. The game was set according to the Spanish content being studied at that time.

The counselors shadowed and made observations on students´ social behaviors. These situations helped counselors approach some personal issues of the students through the fictional character or situation, which allowed the students to feel comfortable to talk openly about their troubles or needs.

Teachers, Counselors, and students were asked about their RPG experience before, during, and after the game through surveys. The results showed the general acceptance of the RPG practice in the classroom, the improvement of students' social interactions during the game, a positive reaction to literacy, better disposition towards team work, and the use of imagination and creativity. Figure 1.

Figure 1. Before RPG experience levels of social interaction, game expectation and literacy interest.   *Figure 2. Increase of creativity and imagination, reading motivation, and motivation towards group work after RPG.*
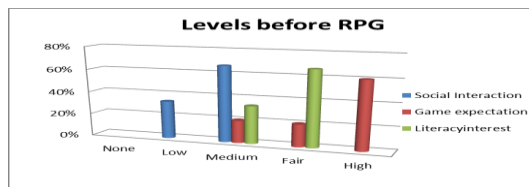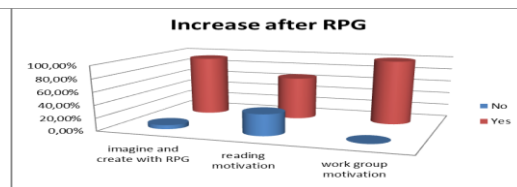
5. Conclusion

Based on the results of the experience, and survey data, I found that RPG in the classroom gives opportunities for students to create bonds, and build empathy towards their classmates. It does not assure an absolute shift in students' behavior but it opens a safe space for students to meet each other without the normal context. The more opportunities the students have to connect with the ones they never talk to, the greater the opportunity for them to understand how it feels to be part of a team and build sense of community.

Academic knowledge can be deepened through RPG. The practice of different concepts involved in the game´s rules can lead students to seeking in their previous knowledge, researching, or finding an expert on how to solve the situations. If they did not find solutions within their own personal knowledge, their group could help acquire them. RPG does not necessarily build better reading habits, but can help by creating connections amongst literacy skills and previous knowledge.

By allowing students to express their ideas to solve the situations in the RPG, the acceptance of their thoughts and feelings is granted. The Master should not judge a solution as right or wrong, his/her role is defined only as a guide. The concepts of right or wrong are not imposed by the grown up in the room. The group develops its own sense of greater good and students regulate each other according to what they feel will be better for everybody.

References

Kobylak, K., Kalyn,B. (2017). Play and Exploration in Grade One: Extending the Principles of Early Learning. Journal of Childhood Studies, Volume 42 (Number 1), 77-87. Spring, 2017, from: https://journals.uvic.ca/index.php/jcs/article/view/16885/7205

Marks-Tarlow, T.,(2014). Clinical Intuition at Play. American Journal of Play, Volume 6 (number 3), 392-407.2014, from: https://files.eric.ed.gov/fulltext/EJ1032085.pdf

Christie, J.F., Roskos, K.A.(2013). Play's Potential in Early Literacy Development. Encyclopedia on Early Childhood Development, Page numbers 1-5. (Revised edition) June 2013, from: http://www.child-encyclopedia.com/sites/default/files/textes-experts/en/774/plays-potential-in-early-literacy-development.pdf

Milgram, R.M., Hong,E. (1999). Creative Out-ofSchool Activities in Intellectually Gifted Adolescents as Predictors of Their Life Accomplishment in Young Adults: A longitudinal Study. Creativity Research Journal, Volume 12 (No 2), 77-87. 1999, from: http://www.tandfonline.com/doi/abs/10.1207/s15326934crj1202_1

Pramling, I., Johanson, E. (2004). Play and learning—inseparable dimensions in preschool practice. Early Child Development and Care, Volume 176, (No 1), pages 47-65. January, 2006, from: http://www.eslov.se/download/18.1bd776c3136a58d5d74800018330/Play+and+learning.pdf

Sawyer, R.K.(1997). Pretend play as improvisation. Conversation in the preschool classroom. Mahwah, NJ: Lawrence Erlbaum Associates.

KEY ELEMENTS IN THE WRITING PROCESS FOR PUBLICATION

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Abstract

The session aims to provide some useful training to researchers in the process of publishing their work. Traditionally, writing workshops have mainly dealt with organization and structure of a research paper and how each of these sections must be written. Another traditional topic has been intertextuality in the sense of how to make proper use of citations. However, there are other elements in the writing process that are also essential for publication. To this end, the workshop will cover the following two aspects: 1) Resources to make our voice visible (positioning) and 2) Resources to involve the reader (engagement markers). A total of four discourse mechanisms will be shown in order to position ourselves as authors and five engagement makers will be exposed in relation to the second topic of the workshop. Theory and practice will be combined providing examples of papers published in prestigious journals where all these resources can be identified. Since these examples will appear in the slides and discussed along the presentation as part of a whole group activity, no limits on the maximum number of participants is established. All researchers interested in improving their writing skills are welcome, especially junior researchers facing the writing of their PhD.

Keywords: Scientific Writing, positioning, engaging, writing for publication.

1. Introduction

This workshop deals with some aspects and resources (see Castelló, Bañales, Iñesta, & Vega, 2009 for an extended version) that we need to know and be able to use when writing an academic text. On the one hand, when and how the author should make him/herself visible, which resources are used to make his/her own position clear and also prevent the text from sounding little academic or impersonal. On the other hand, it examines some resources used to engage the readers and to make proper use of citations.

The resources belonging to positioning and involvement (see Ivanic and Roach, 1990; Greene, 1991; Hyland, 2005) are essential for the author to construct and maintain a personal point of view at the same time as s/he manages to engage and connect with the reader. Thus, when writing this type of texts, we must position ourselves in relation to the material we are discussing and find a satisfactory way of expressing our own claims and arguments (Cadman, 1997).

2. Resources to make our voice visible (positioning)

Among the discourse mechanisms which are useful to position ourselves as authors we can find, firstly, the expressions used to qualify what we say, also called *hedges*. These expressions indicate the value that the reader adscribes to given statement, considering the degree of accuracy or reliability it deserves. The use of these expressions implies that the author's claims are based on plausible reasoning rather than on the certainty of knowledge, and they indicate the degree of confidence that can be attributed to them (Hyland, 2005, p.52).

Given that all statements are evaluated and interpreted through the prism of disciplinary assumptions, writers must calculate how to present a claim, both giving it more or less reliability so as to protect themselves in case of its eventual refutation. For example, instead of the certainty expressed in the following claim: "*The results of the studies conducted by these authors confirm that...*", we could say "*The results of the studies conducted by these authors suggest that...*", or instead of saying in discussion: "*These results are best explained by...*", we should write: "*These results may be explained by...*" or: "*These results may probably be explained by...*".

Secondly, the resources called 'boosters' help authors express confidence in their claims, while making their degree of involvement with the topic addressed. The extent to which the writer emphasizes his/her words by making use of these resources shows which information s/he considers shared with the reader, as well as his/her sense of belonging to a group that shares this viewpoint. An example of the use of such boosters would imply changing the following sentence: "*The study would be one of the activities...*" by the following: "*The study is without a doubt one of the activities....*" In the following sentences, the adverbs and adjectives used -clearly, precisely, clear, crucial- also allow writers to emphasize what is being claimed: "*Our results clearly suggest...*","*This is precisely the aspect which has been less studied...*", "*The studies reviewed present, in our opinion, a clear failure...*", "*This question seems crucial, since...*".

The balance between hedges and boosters in a text reveals the author's commitment with the content of the text, the kind of relationship s/he establishes with his/her readers, and his/her position in a particular disciplinary community. That is, a well known author may increase the use of boosters to refer to his/her own work and, insofar as this author has other books or articles on the topic that support some of his/her claims, s/he may also avoid nuances and prefer more direct expressions. For example, instead of writing: "*The results obtained in qualitative studies suggest that academic writing could somehow be related with the construction of a researcher identity*" s/he may write "*Academic writing is clearly related with the construction of a researcher identity*".

Thirdly, we can make our position clear through the use of attitudinal markers (for instance: *preferably, unfortunately, fortunately*). The use of such resources suggests the writer's emotional relationship, rather than epistemic, regarding his/her own claims. For example, instead of saying: "*We know that the success of the treatment does not depend on...*", we could say: "*Unfortunately, the success of the treatment does not depend on..*".

Fourthly, authors can make their voice visible through self-reference, i.e., through the degree of explicit presence displayed in the text. This presence is shown in the frequency with which authors use the first person plural ("*we*") and possessive adjectives (e.g. "*our* study"). For example, instead of saying: "*This text is an attempt to...*" we can say: "*Our text is an attempt to...*". The absence or presence of explicit selfreference is usually a conscious choice that expert academic writers make to adopt a "discipline situated identity" (Hyland, 2005, p. 181).

3. Resources to involve the reader (engagement markers)

Regarding the second group of resources, known as *engagement markers,* these are mechanisms that are explicitly directed to the readers, whether to focus their attention or to include them in the discourse of the text being written. Based on their previous experiences and knowledge of the academic field, writers can predict the readers' reactions to certain claims and, for instance, anticipate possible objections, or comprehension difficulties, which then allows them to use certain resources to guide the interpretation of the text and proactively respond to any possible negative reactions. Among the mechanisms for achieving these objectives is, firstly, the use of reader pronouns, thus called because its goal is to include the reader in the reasoning presented in the text. The first person plural is the most widely used pronoun. For example, instead of saying: "*If this question is analyzed it can be considered as...*" would say: "*If we analyze this question we can consider it as...*".

Secondly, we can include aside comments to briefly interrupt the argument and provide an insight of what has been said to ensure the reader's understanding. For example, instead of saying: "*Lemar and Wong (1982) suggest that anxiety modifies the perception of efficacy and therefore measure the level of anxiety would say...*", "*Wong and Lemar (1982) indicate that anxiety modifies the perception of efficacy (understood as job performance) and therefore measure the level of anxiety...*".

Thirdly, the reader can also be engaged by appealing to shared knowledge. This resource aims to make the reader recognize a claim as familiar or accepted, but it is also useful to construct a certain solidarity with the reader. An example of this resource would involve modifying the following sentence: "*This disorder is considered....*" by: "*It is commonly agreed that this disorder is...*".

Fourthly, we can use directive phrases or sentences to invite the reader to consider an action or an issue from a particular point of view. This kind of resources include the use of imperatives (e.g., "*Take the following as an example.*"), forms that imply obligation addressed to the audience (e.g. "*We should consider that...*") and predicative adjectives expressing the writer's judgments regarding importance or necessity of a certain claim (e.g. "*It is important to understand that...*"). An example of its use would involved changing the following sentence: "*This situation has an impact on....*" into "*Let us consider more specifically how this situation affects...*".

Finally, we can use questions, the engagement resource par excellence, so as to invite the reader to share our point of view. So, instead of: "*The negative effects can be identified mainly by...*" we can say: "*How can we identify the negative effects? The most widely used method would be...*"

All these resources must be used with care in academic texts and always knowing when and why we are using them. For example, we must realize that in sentences like the following: "*Today's technology allows us to have many facilities in our lives and we increasingly demand more of it...*", instead of using self-reference ("we") as a resource, it would be more adequate to appeal to shared knowledge, using an alternative such as: "*It is undeniable that technology facilitates many everyday activities...*".

Acknowledgements

References

Castelló, M., Bañales, G.; Iñesta, A. & Vega, N. (2009). Writing academic texts: organization and structure, authorial voice and intertextuality. Retrieved 8 February 2018: http://www. sinte. es/joomla_cast/index. php

Cadman, K. 1997. 'Thesis writing for international students: a question of identity?' *English for Specific Purposes.* 16, 1, 3–14.

Greene, S. (1991). Writing from Sources: Authority in Text and Task. (Tech. Rep. No. 21). National Center for the Study of Writing and Literacy Technical Report [Versión electrónica]. Retrieved 16 August 2007: http://www.nwp.org/cs/public/print/resource/677

Hyland, K. (2005). Stance and engagement: a model of interaction in academic discourse. *Discourse Studies, 7*(2), 173-192.

Ivanic, R. & Roach, D. (1990). Academic writing, power and disguise. En R. Clark, N. Fairclough, R. Ivanic, N. McLeod, J. Thomas, & P. Meara (Ed.), *Language and power* (pp. 103-121). Clevedon, Avon: BAAL and CIL

DEVELOPING AFFECTIVE LEARNING ENVIRONMENTS: IMPROVING EMOTIONAL INTELLIGENCE FOR THE HELPING PROFESSIONAL

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Abstract

Blooms taxonomy includes three learning domains: cognitive, kinetic and affective. With the explosion of information and the need for a highly knowledgeable and skilled workforce, higher education has done an admirable job focusing on the cognitive and kinetic learning domains. In order to provide emotionally intelligent workers, however, education needs to focus more on the affective domain. This is particularly true for students who are attracted to the helping professions such as human services, social work, psychology and medicine. The affective domain focuses on students' values, attitudes, beliefs, and emotional engagement (Cazzel and Rodriquez 2011). In order to be effective helpers, students must be able to demonstrate their emotional intelligence. We need to shift education from what students need to know, and focus more on what they need to become (Valiga, 2014). There are three critical components in providing affective learning experiences: creation of an emotional learning environment, implementation of affective learning activities and development of valid and reliable outcome instruments. This workshop will discuss the implementation of these three components of affective learning in the Human Services Department at Metropolitan State University of Denver. Intended participants (no maximum required) include faculty and administrators from various helping disciplines. At the conclusion of the workshop, participants will be able to describe specific strategies for creating emotional learning environments, construct a plan for affective engagement of their students and discuss evaluation methods.

Keywords: Affective, learning, curriculum, design.

1. Introduction

Emotional intelligence, while not a new concept, continues to be an important consideration for baccalaureate programs in the helping professions. The discussion around intelligence expanded in the 1980s when Howard Gardner encouraged scientists and educators to examine multiple types of intelligences, particularly related to learning styles. Peter Salovey and Jack Mayer explicitly defined the term "Emotional Intelligence" (EI) in the 1990s as a term that explained how reasoning was enhanced by thinking about emotion and incorporating emotion into the discussion of cognitive processes. However, when Daniel Goleman, in his text *Working with Emotional Intelligence* (1998) suggested that EI mattered twice as much as IQ, attention to the topic and the potential that EI offers was even more pronounced.

Highly emotionally intelligent people can perceive emotions, use emotions in their thought process, manage emotions and understand the meaning of emotion better than their peers (Mayer, Salovey, & Caruso, 2004). These characteristics offer an obvious advantage in the field of the helping professions. In fact, Mayer, Salovey & Caruso (2004) point out that a person considered "High EI" is often seen as more open and agreeable than their peers and is less likely to engage in self-destructive and problem behaviors. It follows, then, that instructors of students in majors where helping others is the core objective are well served to consider how to cultivate this specific aspect of intelligence in their students.

The concept of learning domains has been a part of higher education since the mid-1950s. Krathwohl, Bloom and Masia (1956) articulated three learning domains: cognitive, kinetic and affective. The cognitive domain involves remembering, understanding, applying, analyzing and evaluating information. It is often considered the "thinking" domain. The kinetic or psychomotor domain refers to behavioral skills and movements. With the explosion of information and the need for a highly knowledgeable and skilled workforce, higher education has done an admirable job focusing on these two domains. In order to provide emotionally intelligent workers, however, higher education needs to increase its focus on the affective domain. This is particularly true for students who are attracted to the helping professions such as human services, social work, psychology and medicine. We need to move away from old instructor-centered teaching models that prioritized memorizing facts, to newer student-centered approaches that integrate all components of learning. A movement from the "sage on the stage" to the "guide on the side" and a shift from what students need to know, to what they need to become is warranted (Valiga, 2014).

The affective domain focuses on students' values, attitudes, beliefs and emotional engagement (Cazzall & Rodriguez, 2011). It involves the ability to engage deeply and thoughtfully about the meaning behind the information. It allows for curiosity, exploration, willingness to try new approaches, and improved critical thinking (Glennon, Hart, & Foley, 2015). For example, "When students can explain cultural differences, we conclude that they are culturally sensitive. However, knowing cognitively that people are different is not the same as treating people in ways that respect those differences" (Valiga, 2014). Although the three domains are often conceptualized as distinct constructs, there is actually significant overlap and interconnectedness. Mottet (2015) argues that emotion and cognition are "two sides of the same coin", and learning occurs via an emotion attached to the information or skill. These emotional reactions can significantly inhibit or enhance student learning. Thus, affective learning creates the opportunity for an enhanced educational experience, as students are able to put their new information and skill into an emotional context.

2. Creating the environment

To create an environment for students to be open to emotional learning, faculty must conduct an honest self-inventory of traits and behaviors that support or inhibit such learning. Gorham defined teacher immediacy as the emotional connection between students and faculty (1988). He identified nine key instructor behaviors to support emotional learning:

1) Willingness to praise or acknowledge students' work

2) Willingness to engage in conversation with students outside the classroom before or after class

3) Faculty self-disclosure by using personal examples to make discussion points

4) Encourage classroom discussions and hearing the students' opinions

5) Following up on student-initiated topics

6) Flexibility regarding course requirements and time frames

7) Allowing for feelings in discussions

8) Using humor

9) Supporting an active feedback process with an openness to be accessible to students outside of class.

In addition to verbal behaviors, nonverbal examples of teacher immediacy include nonintrusive touch, smiling, relaxed body posture, good eye contact and body movements. It is also important to consider class proxemics when designing the physical space. Circle and horseshoe shapes are much more conducive to discussion than the typical classroom rows.

We tend to start classes with interactive exercises. An opening icebreaker, in which students introduce themselves with an adjective that starts with the same first letter as their first name can be a fun and introspective introduction to the course. In addition, we often have students engage in self-reflection by answering questions such as "If you had any superpower, what would it be and why?" After the icebreaker, it is important to create an environment in which students feel safe to share opinions, experiences and perspectives. We have students form small groups and answer the question, "What expectations do we want to set to make this a safe space to discuss potentially sensitive issues?" It is impressive what students come up with and it can be helpful to remind them of their rules and expectations when the class struggles with difficult content.

3. Affective learning activities

Once students feel safe and comfortable in an affective learning environment, instructors can design activities to stimulate discussion and validate student concerns and interests. Moving away from the traditional "death by PowerPoint" is a key component. Some faculty have stopped using PowerPoint all together, but for those who rely on it, simply embedding videos, graphs, and other artistic media (followed by discussion) can be helpful. Brookfield and Preskill designed a "teaching through discussion" model, which is an ideal match for stimulating and supporting emotional learning (2005). Frequent small group breakout sessions are also helpful at this level.

Reflective exercises and assignments are a great strategy to assist students in exploring and assessing their values and beliefs. Students may complete self-assessment instruments exploring their strengths and weaknesses on certain counselor traits like empathy, acceptance, and genuineness. In addition, they might conduct a self-cultural assessment by responding to prompts such as: "Select 3 group identities you possess related to race, gender, ethnicity, sexual orientation, disability, religion, socioeconomic status (or others). Why did you choose these three? Of the three which one is most salient and why? Has it shifted or changed over your lifetime? How?

Another useful exercise is a debate assignment. The value of debate is not the resolution of an issue or even the swaying of others to your opinion, but rather the process of exploring all sides of an issue (Bradshaw, & Lowenstein, 2011). We find it beneficial for the class to pick the topics they wish to

debate, but for us to randomly assign the groups to either a pro or a con side. In our Multicultural Issues class, students have selected topics including interracial adoption, government vs market health care, assimilation vs cultural integrity and role of welfare in assisting people out of poverty. Although some faculty use debate as an impromptu activity to "switch things up"- we find it much more valuable to have it as a planned assignment, in which students are expected to conduct research to support their position and refute the other side. As with all affective experiences, it is important to debrief after the activity.

4. Measurement

One component of affective measurement is the student perspective. Embedded in the expectation that students engage with the material is the intention that students are both thoughtful and planful about their course participation. In the beginning of the semester, we ask students to clarify what they hope to accomplish by the end of the semester and identify their biggest fears. Brookfield and Preskill (2005) have a developed a class assessment tool which asks students, "At what point during the semester have you felt most engaged as student; At what point have you felt least engaged, What action that anyone in the room took (fill in time period) did you find most affirming or helpful; what action that anyone in the room took (fill in time period) did you find most puzzling or confusing?" We have found it useful to use this tool as a midterm evaluation of the learning environment.

Another aspect of affective assessment is objective measurement of instructor fidelity. Ondrejka (2014) developed an Affective Classroom Assessment Tool that measures instructor characteristics and affective teaching strategies. Development of pre/post test instruments allows for comparison between beginning and end of semesters but also measures if learning is stable or fluid throughout a semester (Myers & Goodboy, 2015). Finally, if we wish to develop life long, emotionally competent providers, we need to create longitudinal instruments to measure the permanence of emotional integration and the development of the clinical value set.

5. Conclusion

Affect is often the neglected learning domain but it remains one of the most important to develop emotionally competent helping professionals. The Human Services & Counseling department at MSU Denver has implemented numerous pedagogical strategies to create emotional learning environments and assist students in becoming emotionally intelligent counselors.

References

Bradshaw, M.J., & Lowenstein, A.J. (2011). Debate as a teaching strategy. In *Innovative teaching strategies in nursing and related health professions* (5th ed.). Bradshaw, M.J., & Lowenstein, A.J. (Eds). Sudbury, MA: Jones and Bartlett.

Brookfield, S. D., & Preskill, S. (2005). *Discussion as a way of teaching: Tools and techniques for democratic classrooms (2nd ed).* San Francisco, CA: John Wiley & Sons.

Cazzell, M. & Rodriguez, A. (2011). Qualitative analysis of student beliefs and attitudes after an Objective Structured Clinical Evaluation: Implications for affective learning in undergraduate nursing education. *Journal of Nursing Education*, *50, (12),* 711-714.

Glennon, W., Hart, A., & Foley, J. T. (2015). Developing effective affective assessment practices. *Journal of Physical Education, Recreation and Dance*, *86, (6),* 40-44.

Goleman, D. (1998). *Working with Emotional Intelligence*. New York; Bantam.

Gorham, D. (1988). The relationship between verbal teacher immediacy behaviors and student learning. *Communication Education, 37*, 40-53.

Krathwohl, D. R., Bloom, B. S. & Masia, B.B. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook II: Affective domain*. New York: David McKay Company.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2004). Emotional intelligence: Theory, findings, and implications. *Psychological Inquiry, 15,* 197-215.

Mottet, T. P. (2015). Affective learning from a cognitive neuroscientific perspective. *Communication Education, 64, (4),* 508-510.

Myers, S. A., & Goodboy, A. K. (2015). Reconsidering the conceptualization and operationalization of affective learning. *Communication Education*, *64, (4),* 493-497.

Ondrejka, D. (2014). *Affective teaching in nursing: Connecting to feelings, values and inner awareness*. New York: Springer Publishing Company.

Valiga, T. M. (2014). Attending to affective domain learning: Essential to preparing the kind of graduates the public needs," *Journal of Nursing Education*, *53 (5),* 247

TRANSDISCIPLINARY WRITING:
AN EXERCISE IN EXPLAINING VISUAL DESIGN PROGRAMS

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Abstract

This workshop session will focus on writing about three visual design software programs -- Revit, Grasshopper, and Houdini. It was drawn from an activity we had in a transdisciplinary course taught in Spring 2018. It will consist of dividing the room into two groups. One group will be tasked with explaining each program when given only written descriptions. The other group will have to explain each program after being given only visual images. We will then show each program's functionality and task the room with revising their descriptions. The workshop hopes to unpack the benefits of both written descriptions and visual depictions, where they overlap and where they are most helpful. In doing so, it will challenge participants to describe complex technological programs to a lay audience.

Keywords: Transdisciplinarity, communication, writing, visual design.

1. Introduction

This workshop session will focus on writing about three visual design software programs -- Revit, Grasshopper, and Houdini. It was drawn from an activity used in a transdisciplinary course taught in Spring 2018.

First, we will provide background and context for this activity. The course in question is part of a relatively new major offered in the Polytechnic Institute (formerly the College of Technology) at Purdue University in West Lafayette, Indiana. The major is titled "Transdisciplinary Studies in Technology (TST)" and has been considered a sandbox of sorts for pedagogical innovation. As the name indicates, the major (and its courses) focuses on transdisciplinarity, which we consider the *blending* of multiple disciplines to solve project-orientated problems.

Our courses are often themed. The course from which this activity is drawn focused on 'spaces,' with a particular bend towards architectural space and urban design. Throughout this single course, we used a selection of visual design software programs to explore this concept of space from various technological angles.

As a part of this process, one challenge we gave our students was to describe each of these visual design programs to a layperson. While these programs are all of the same type insofar as they are programs of spatial design, they are dramatically different in their specifics. We tasked the students with crafting a written explanation for these programs.

The students were divided into two groups. The basis of the first group's explanations were existing online descriptions of the programs. These descriptions were taken from each program's official website. The other group had to base their explanations on images of each program (including its tools, functions, and capabilities).

Each group had to write an expanded explanation of what (they believed) the program "could do." The description they wrote for each program was meant to be for a general audience. It was supposed to capture the essence of the program's capabilities. Part of the challenge for this exercise was identifying this elusive "essence" as each program has a wide array of functionalities.

We then taught each program in class. Following this introduction, the students' second task within this exercise was to re-do their descriptions. After using each program themselves, the students should have had a stronger experiential grasp and feel of the programs. The constraints remained the same: one group could use only text; the other group could use images. These modified descriptions were then given to a third (layperson) party to see if said third party could understand each program.

2. Objectives

There are several layers of objectives within this activity. The overarching objective was to have our students reflect on their ability to write about technology, ultimately in order to make them superior writers in the technology field. However, there are many sub-components to achieve this goal.

First, we wanted our students to reflect on a selection of existing and official written descriptions for each visual design program. We wanted them to assess and reflect on the clarity of these descriptions and whether these descriptions accurately describe the program from only a general and categorical level or if they captured any of the nuances. If it was thought the descriptions captured said nuances, we wanted our students to identify what elements succeeded in conveying the program's use. If the descriptions did not capture the nuance, we wanted our students to reflect on what was confusing and/or lacking in each program's descriptions.

Second, we wanted our students to reflect on the use of visuals to convey meaning. If they felt that the verbal descriptions of the program were lacking whereas the pictures succeeded, we asked them where this lack came from. Did they believe it was due to poor writing? Did they believe that there was a type of limit the language conveying the limitations? And if so, why? These questions were ultimately designed to push them into formulating a better description. Next, we wanted them to identify the advantages the images offered. What did they feel the images offered that the written description did not. Was this due heir biases or something else?

Third, we wanted our students to identify what language worked for a lay person. This goal was accomplished by reflecting on their own backgrounds and biases as well as discussing with their individual team members as to why or why not each member believed they understood the programs' functionalities. This exercise also led them to practice relaying technical terminology and jargon in a manner that a lay audience can understand.

Finally, as they worked towards accurately and effectively communicating the capabilities of the programs in question, we had them reflect on the processes and decisions they made to do so. The goal was ultimately to instill a factor of lifelong learning into the students, in particular the ability to convey complex technological programs in a clear and precise manner.

3. Exercise

For this workshop, we are going to recreate the exercise mentioned above. Participants will be divided into two groups. The first group will receive the following verbal descriptions. It's important to note that this exercise can be done by giving varying levels of description.

The first program to be explored will be Revit, which is described on Autodesk's website as follows: "Revit is software for BIM. Its powerful tools let you use the intelligent model-based process to plan, design, construct, and manage buildings and infrastructure. Revit supports a multidiscipline design process for collaborative design" (Revit). The first group will be tasked to discuss this program and attempt to provide a fuller description of Autodesk's functionality. This includes such descriptions as how the program functions, what the interface looks like, what projects can be accomplished with this program, and other questions on the program's nuance.

The other group will receive pictures of the Revit operating. The only detail we had kept constant is that some item must have been created in the screencapture. In other words, we did not give pictures of an empty interface. Both groups are tasked to explain the program in their own words.

The second program we will run the exercise with is Grasshopper. The description given to the first group from the Grasshopper website is as follows: "For designers who are exploring new shapes using generative algorithms, Grasshopper is a graphical algorithm editor tightly integrated with Rhino's 3-D modeling tools. Unlike RhinoScript, Grasshopper requires no knowledge of programming or scripting, but still allows designers to build form generators from the simple to the awe-inspiring" (Grasshopper). As before, the other group will be given images of the program.

The final program used will be Houdini, which is described as follows on the sidefx website:

> Houdini FX combines superior performance and dramatic, ease-of-use to deliver a powerful and accessible 3D experience to VFX artists creating feature films, commercials or video games. With its procedural node-based workflow, Houdini allows users to create more content faster to reduce timelines and enjoy enhanced flexibility in creative tasks. Houdini is perfect for Visual Effects artists and technical directors with its particle and dynamics environment. Houdini FX includes a complete toolset for studios that want to use it for other tasks such as lighting, animation or procedural modeling (Houdini).

Once again, the other group will be given a series of images from Houdini. As before, both groups will read the descriptions that they had written.

Following these exercises, each program will be demonstrated for a couple of minutes. The workshop group will be shown the live interface as well as a (student) project created in the program in question.

Finally, having now briefly seen each program operate, the groups will be tasked with rewriting their descriptions. These again will be presented to the audience as a whole, and we will discuss how these descriptions compare to those found on the website.

4. Conclusions

As a vertically integrated classroom, the students in our course were comprised of freshmen, sophomores, and juniors. Within and amongst these student classifications, the skills of the students varied. Furthermore, their foci ranged from somewhat related to one another to completely foreign disciplines. Both because of the class demographics and in spite of the class demographics, the salience of the students ability to communicate the programs with which they worked, rationalized, and created their designs was imperative.

It is believed that the audience for this workshop will also be comprised of members with very different backgrounds, who can similarly relate their own experiences and biases throughout this exercise. Certain members may be more familiar with the program while other members may represent a lay audience.

The discussion will focus on which descriptions were clearest and why. Typically, the visual images provide a better "feel" for the program whereas the written descriptions more easily point out the nuance of each program. It will hope to have the participants identify the elements that most easily convey the programs' abilities.

References

Autodesk. Revit Family: BIM software. (2018, April 9). Retrieved from: https://www.autodesk.com/products/revit -family/overview
Grasshopper: Algorithmic modeling for Rhino. (2018, April 9). Retrieved from: http://www.grasshopper3d.com/
Sidefx. Houdini FX. (2018 April 9) Retrieved from: https://www.sidefx.com/products/houdini-fx/

DEMOCRATIC DIALOGUE IN THE CLASSROOM:
HOW TO DEAL WITH HOT TOPICS

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Abstract

The education system in today's society is being confronted with new challenges due to cultural and ethnic diversity. Varying opinions and perspectives about a mixed society can be enriching but are not always considered as advantageous by all concerned. Certain events (e.g. the terror attacks in Europe) have had an enormous impact on society over the past years. The impact of such events has had a direct influence on the worldly perception of students and teaching staff. It is not always straightforward for teachers to react constructively to racial comments or to moderate discussions about sensitive topics. Democratic Dialogue consists of several communication techniques. It is an instrument to deal with hot topics and the struggle with sensitive themes. The workshop will start by explaining the main principles of Intercultural Communication. What is cultural awareness and how can we deal in intercultural situations where misunderstandings can arise from the person's different value systems? The second part of the session will focus on the Socratic Method. After sharing our practical experiences and cases arosen from our own practice in Brussels, we will work on cases given by the participants. Participants will have the possibility to exchange ideas and good practices. Finally, we will provide effective tips and tricks. This workshop will focus on ways to teach the controversy in order to foster democratic civic attitudes, cultural consciousness and critical thinking. The workshop is highly interactive and is aimed at teachers interested in improving their communication skills on sensitive topics (max.20 participants).

Keywords: Dialogue, controversial topics, teacher training education, multicultural and (inter)cultural communication, critical thinking.

1. Introduction

Our society is in constant flux. The societal context in which the current generation is growing up is changing rapidly. People are held increasingly responsible for the direction which their lives may take. We also see a parallel evolution in the field of morality. Previously self-evident and all-encompassing societal norms and values are breaking down. Due to a perceived absence of a general reference framework, we are expected to construct one ourselves. The competencies required to construct such a reference framework are generally lacking because we have not learned how it should be done. The lack of a clear and common reference framework causes tension and uncertainty amongst many. The fear of an uncertain future is also reinforced by (social) media that influence the perception amongst students and teaching staff. Controversial issues that polarize society also affects the school climate. Certain themes such as the European refugee crisis or the terrorist attacks in Brussels and in other cities, can stir up feelings of resent. Students feel increasingly personally concerned by certain controversial societal themes and this can provoke highly emotional or even hostile reactions.

Schools with a diverse student population are increasingly confronted with sensitive topics that preoccupy the students and their teachers. Students feel personally affected by current issues such as discrimination, the conflict in the Middle East and the insurgence of DAESH. There is a clear discrepancy between teachers' sources of reference and those of the students that gather their information from social media and personal experience. We see that societal and political discussions even cross those school boundaries where influx from other ethnic groups has been minor. Students that have been directly confronted with problems surrounding these current issues in their own neighbourhood, as well as those who only know about multi-cultural issues from the television, often bring broach the subject at school.

2. Objectives

A Democratic Dialogue is a constructive and investigative dialogue about a sensitive topic. By means of this dialogue, we aim to promote an empathic attitude amongst the participants, which can lead to encounters that highlight common ground whilst maintaining respect for differences.

The main objectives of the Democratic Dialogue are:

- To promote mutual understanding and commitment.
- To unite people instead of polarizing them.
- To explore and clarify ideas and central concepts.
- To promote critical thinking by reviewing with a critical eye those assumptions and prejudices on which an opinion is based.
- To develop participants' capacity to reason and think things through.
- To ask supplementary questions instead of being judgmental.
- To show how to formulate a point of view clearly and respectfully.
- To improve communication and listening skills.

In this workshop, we will especially focus on ways to teach the controversy in order *to foster democratic civic attitudes, cultural consciousness and critical thinking*.

3. Method

In this workshop, we wish to provide teacher trainers and teachers with concrete advice and support on how to moderate sensitive discussions in a constructive way. Democratic Dialogue consists of several communication techniques. It is an instrument to deal with hot topics and the struggle with sensitive themes. The workshop will start by explaining the main principles of Intercultural Communication. *Intercultural communication* literally means the communication between people of different cultural backgrounds. Each person has an internal set of values that influences how he or she communicates with others. The intercultural communication method teaches us the importance of understanding one's own set of values and how to be open to other sets of values. This method can show participants which attitude(s) to adopt to enable open, meaningful and constructive communication. The second part of the session will focus on the *Socratic Method*, who teaches us that one only really grasps what another person means by asking supplementary questions. Questions such as 'What do you mean by …?', 'Can you explain why you think that?' enable better mutual comprehension than a judgmental attitude. This method also provides the necessary emotional neutrality to bring depth into the dialogue process. Both methods will be connected to cases arosen from our own practice in Brussels, and also to cases given by the participants. So, participants will have the possibility to exchange cases, ideas and good practices. The explained methods and dialogue tips given are not binding but rather guidelines on how discussions can be held. We wish to support teaching staff in moderating a dialogue but we also realize that each situation is unique with its own specific sensitivities.

4. Discussion and conclusion

In several Teachers Bachelor programs, there is a clear need for a preliminary process in order to develop the intended cultural awareness and approach. Most teachers feel insufficiently prepared to facilitate a dialogue about sensitive societal topics and both students and teachers feel insufficiently aware of the current urban challenges within the education system. Discussions with teachers have made clear that a theoretical framework does not prepare teachers effectively enough to train future teachers as competent moderators. In order to integrate a dialogue model in the teaching curriculum, a solid training track is needed which teaches and practices the dialogue tools effectively.

References

Ceulemans. C., Cornelissen. E. (2009). Kansen creëren door filosoferen met leerlingen in beroeps- en technischh onderwijs. Vlaams Netwerk voor Eigentijds Filosofieonderwijs.

Claes, B., Claeys, A., & Yentur, A. (2016). Werkboek cultuursensitieve zorg. Uitgeverij: Politeia

Cornelissen, E. (2012). Filosoferen met kinderen. Het Vrije Woord 'Magazine voor vrijdenkers'.

Cornelissen, E. & Desegher, I. (2012). Sprookjes en Filookjes. Filosoferen over sprookjes. Gent: Academia Press.

Cornelissen, E., & Yentür, A. (2017). Embracing controversy. Democratic Dialogue in the classroom. Erasmus University College of Brussels.

TEACHING LEARNERS TO TAKE CONTROL OF THEIR FUTURE: APPLYING THE MULTIDIMENSIONAL CURRICULUM MODEL IN SCHOOLS

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Abstract

This workshop aims to introduce the Multidimensional Curriculum Model (MdCM) (Vidergor 2017, 2018) which helps teachers to better prepare students for our changing world, acquiring much needed skills. The model combines innovative teaching strategies like problem and project based learning, phenomenon based learning, and inventive thinking to teach 21st century skills in a blended learning environment. The Uniqueness of the model is expressed in the development of future thinking literacy through looking at a subject from three different perspectives: the personal, the global, and time (present, past, and future) perspective, incorporating latest technology. The workshop will expose participants to: (a) The MdCM; (b) its components; (c) the different thinking tools used for promoting future thinking literacy; and (d) the current research on the effectiveness of the model regarding its contribution to the enhancement of thinking skills, knowledge acquisition, motivation, and learning strategies will be presented.

The workshop is intended for all participants engaged in teaching in elementary and secondary schools including principles, grade and subject coordinators, and teachers of all subject areas (Max no. 35).

Keywords: The Multidimensional Curriculum Model (MdCM), future thinking literacy, thinking skills, knowledge acquisition, learning strategies.

References

Vidergor, H.E. (2017). Effectiveness of the multidimensional curriculum model on the development of high order thinking skills among elementary and secondary school students. The Curriculum Journal, 1-21. DOI: 10.1080/09585176.2017.1318771.

Vidergor, H. E. (March, 2018). The Multidimensional Curriculum: Teaching learners to take control of their future. Leiden and Boston: Brill-Sense Publishers.

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