

Modern Technologies for Teaching and Learning in Socio–Humanitarian Disciplines

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Chapter 5

Collaborative Educational Approach as Contact Work Technology in Higher School

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ABSTRACT

The chapter focuses on collaborative educational technology and shows its efficacy in developing professionally significant qualities in college/university students. Both theory and practice of the technology are justified by history, description of technology stage launching, specifics in organization, and preparation of didactic material. Evidence-based research, which has been conducted with higher school students majoring in psychology, is presented. Sampling group involved in a transformative psychological and pedagogical experiment consisted of 60 subjects. Outcomes of the technology implementation can be students develop motivation in a course study, acquisition of knowledge in group work becomes more effective, researching students' psychological aspects of collaboration becomes significant.

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INTRODUCTION

Dynamic development of modern society, changes in the world educational environment promoted by such tendencies as emergence of unified educational space, the rising generation with their new requests in education require greater focus on innovative teaching – learning forms which can enhance educational outcomes as compared to teacher-up-front style of instruction along with distance and on-line learning in higher school.

It is well established that an individual's psychic can develop its abilities only in a dialogue and cooperation with other people. Thus, successful acquisition of social competence can be conducted only when educational environment for collaborative education is created, and social competence becomes the result of subjects of the educational process cooperative efforts. A motivation aspect becomes the key factor in the collaboration. Social motives can lead to inner, cognitive level. This approach is especially justified in understanding of the subjective approach in education. Revealing the contradiction between an individual nature of teaching in traditional educational process, which is called group education, and collective nature of modern education, V.K. Dyachenko remarks that “group teaching/frontal teaching, even if the content is extremely valuable, fail to develop personality qualities in students that are essential in the modern world” (Dyachenko, 2006:135). Harvard University, the Carnegie Endowment and SRI International researches confirm that professional success is shaped by the level of soft skills by 75-85% and only 15% are related to hard skills (Watts, 2008). Organization for Economic Co-operation and Development, (OECD) published the report on three-year research “Skills for Social Progress. The Power of Social and Emotional Skills”, that also highlights the paramount importance of emotional and communicative skills for success in professional life (OECD, 2015). The report states that these skills are in priority as compared to academic achievements. Such skills as ability to complete complex tasks, critical thinking, creativity, ability to work in a team, and emotional intellect establish themselves as a leading choice. P. Griffin, the founder of the research project AT C2 and Director for the Assessment Research Centre, University of Melbourne, notices that in various countries a set of skills can vary, however, they are always related to skills requested to the XXIst century, i.e. critical thinking, communication skills, creativity, skills to behave adequately in digital reality (Griffin, 2016). XXIst century skills are also called 4 C's: Creative thinking, Collaborating, Communicating, Critical thinking. These are considered to be essential keys for success in life.

Consequently, the focus is on the development of universal skills, that are necessary to be acquired during a learning process. Overall, problems that can hinder the development of these skills are related to overpowering contradictions in the modern education: 1) between application of communicative skills in private/public life and their application during learning process (Dyachenko, 2006); 2) between students' orientation on past patterns of social and professional culture, so-called "cultural preservatives", and the necessity to make students focus on future content in life, general and professional culture (Verbitsky, 2012).

Educational technologies discussed in the chapter create necessary conditions aimed at increasing teaching/learning quality, making graduates more competitive in the labor market. They are oriented at developing such universal competencies as ability to work in a team and successfully communicate in work-settings. Professionally significant personal qualities such as responsibility, critical thinking and flexibility in cooperation are also in the limelight of the proposed technology. These are soft skills much discussed in an international educational community. Soft skills are considered to develop competency and to enhance one's ability in operating successfully in the modern world (Duncan, 2012). So, soft skills are the most efficient instruments and methods for higher education institutions to appraise the students' future capabilities. Consequently, recognizing and evolving the importance of soft skills acquisition have been a challenging task for educationalists and curriculum designers (Hodges, Burchell, 2003).

Students may benefit a lot from working in groups, but the learning potential of collaboration is underused and underestimated in practice (Johnson, 2007). Educationalists use different terms, namely collaborative, cooperative, and team-based learning, which are usually considered to represent the same concept, although they are sometimes defined differently (Kirscher, 2001); authors prefer the term "collaborative", as it comprehensively represents the idea of working together, contributing to the process, motivating oneself and others. In collaborative learning, students participate in small-group/pair activities in which they share their knowledge and expertise. In these student-driven activities, the teacher usually acts as a facilitator (Kirscher, 2001).

The objectives of the study are to analyze theory and history of collaborative learning methodology, outline technology and methodological approaches applicable for teaching/learning various subjects, present options for preparatory and launching stage, prove the efficiency of the technology in developing professionally essential qualities and soft skills. The key idea of the collaborative learning technology consists in communication between students who in turns take the roles of either Teacher or Student ("Student-Teacher" collaboration).

HISTORICAL AND CONTEMPORARY CONTEXT

Educational process involves development of important personal qualities, such as independence and responsibility with further progress to personal growth and self-management. Individuals improve their vocabulary and speech skills. Social development function is implemented. There is potential in diverse and manifold choice of subjects, courses design and study/learning preparation and assessment methods. This methodology can be used under various circumstances, depending on specific purposes and objectives set for the approach.

Group-based training approach differs from other forms of educational processes, such as class-and-lesson system described by John Amos Comenius, Bell-Lancaster method (monitorial system), Mannheim School System developed by Joseph Anton Sickinger. Various types of group-based activities, such as Winnetka Plan (Michigan, USA) designed by C. Washburne, Dalton Plan (Massachusetts, USA) developed by Helen Parkhurst, different versions of collaborative learning approach described by educators from different countries at various timepoints, are closer to the processes described in this paper, although not exhaustibly.

The method originated in the early 20th century, on the territory of modern Ukraine. An event occurring in 1918 at a place called Kornin played an important role in the development of education. Aleksandr G. Rivin, an educator, erudite, and creative thinker, responded to a call for assistance in preparing children for taking their final school examinations, thus beginning his work that later resonated widely in the educational community. Current social and economic environment in the country set forth the aim for the educator: to prepare children with different levels of knowledge in school subjects, so that they can take the final tests on a par with children attending university-preparatory schools. The children were required to take examinations in the Russian Language and Literature, Math, History, Geography, Logics, and Introduction to Philosophy. The goal set by the educator for himself was truly unreachable. This school operated for less than a year. Unfortunately, war resulted in cease of the educational process. This school was the first place in the history of Russian and global education to employ pair work, also referred to as talgenism, organized dialogue, Kornin method, a dialogue combination method.

The communication system in question is based on a very simple principle, i.e. in the educational settings of contact communication one or a few students listen to a student-presenter. The study process is going on in groups and/or pairs where partners are changing as soon as the assignment set by a teacher is completed. These groups/pairs will be referred to as *open groups/open pairs*. Currently, when on-line and e-education technologies are becoming more and more sought-after, both components of communication are significant: the contact one and the change

of roles (“Teacher” – “Student”) along with partners in educational settings in communicative and developmental environment.

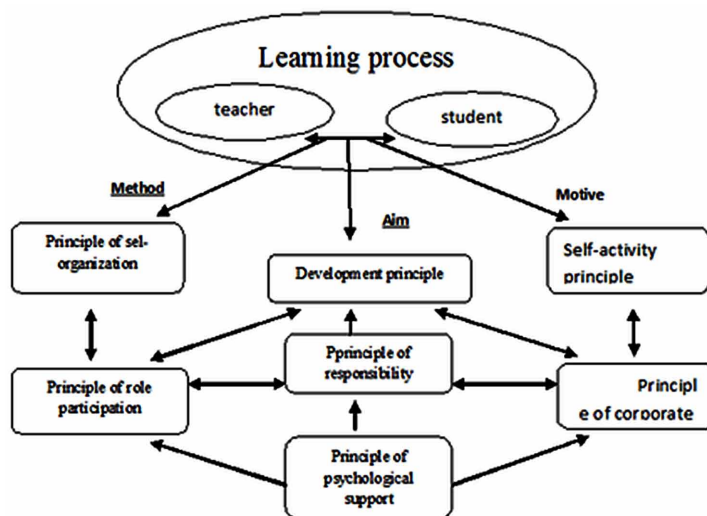
The essence of collaborative study in the process of contact training is that the teacher, either directly or indirectly, determines students’ activities, the latter depending on the educational goals. Thus, this turns into the collaborative process between the teacher and the student, which provides necessary conditions for the student to process content of the subject. I.Ya. Lerner (1917-1996) says that a teacher determines students’ activities throughout the whole learning process, and communication is possible during any form of education (Lerner, 1989 et seq.). Its degree depends on determinancy, i.e. how much successful and accurate teacher’s monitoring is. When performing unsupervised activity, students are still restricted by the task system developed or selected by a teacher, thus their activities are also determined no less than in a conversation or any other type of communication. Furthermore, a teacher monitors unsupervised activity progress, evaluates and assesses results, while the tasks themselves can encourage and involve flexibility and originality. I.Ya. Lerner considers that it is difficult to distinguish when the communication is more intense: during a reproductive conversation, when students reproduce what they know, when they listen actively, or when they are involved in unsupervised work, but the latter is structured by a teacher.

Translating theory into practice, it is necessary to define training principles, i.e. mechanisms for training theory implementation. Basic principles for educational process management, as defined by L.M. Fridman, involve the system of cooperation and collaboration between the teacher and students along with study process structuring, the latter involving teaching/learning materials, teacher and students’ activities (Fridman, 1987).

The figure shows that teacher-student cooperation and student-student cooperation are based on the principles of self-organization, development and unsupervised activity. Their correlation to other principles is easily traced by arrows. Some principles require further explanation.

Role participation principle implies that certain components of educational activity are distributed among all participants. Furthermore, the roles can be assigned for a long-term period (half a year, a year), as well as for a short one aiming at short-term tasks. This principle entails development of interpersonal relations among all participants of the study process; on the other hand, each and every participant becomes the subject of their own activity, as it is they themselves, who outline their responsibilities and ways to carry them out. Thoughtful and purposeful communication among students should be enhanced and encouraged.

Figure 1. Training process principles by L.M. Fridman



Principle of psychological support means that learning-need-and-motivation settings for study activities are created, and emotional richness of the latter is provided. The point here is that the teacher trusts students and believes in them.

In modern times, collaborative work in higher school is highly demanded, as it enhances development of both universal (soft skills) and professional competencies. Review of articles written in recent years shows that collaborative approach is assumed as a significant one from several view-points: communication and development (Alekseeva, 2017), educational content (Mkrtyan, Unsheva, 2013), development of cognitive functions (Karabutova, 2014), development of soft skills (Shilova, 2017), motivation to learning (Mineeva, Oladyshkina, Klopova, 2018), adaptation to educational settings in higher school (Churkina, 2015), development of interactive transformation techniques (Vasilkova, 2016), significance of combination of contact and distant learning forms in higher school (Nikolskaya, Rodkina, 2018).

METHODOLOGY: TECHNOLOGY DESIGN

General concept of collaborative educational approach involves subjective evaluation criteria for the proposed theory and for the established view of the study object. Collaborative form of study management as an educational technology for contact work, based on classification by V.K. Dyachenko, is defined as the research target.

The subject of the research covers pedagogical aspects of collaborative education implementation. As collaborative educational approach must meet basic requirements for both any concept of educational process in general, and the concept of collaborative educational approach itself, bias elimination criteria were employed. In summary, these criteria can be defined as following:

- As any concept, the collaborative educational approach must have unarguable and self-evident prerequisites, which, in this case, are the objectives of education;
- The concept must be consistent, and the methods must allow for each subsequent step to logically follow from the previous one;
- The scope of collaborative educational approach must involve all activities related to education-directed pedagogic impact;
- Personalized approach to the collaborative education, and to using a specific technique in particular, must allow for a definitive analysis.

The methodology being applied on a regular basis provides specific results, e.g. it develops professionally significant qualities. Being included occasionally, this type of work allows to implement various pace of knowledge processing; consequently, larger amount of information can be absorbed.

While assessing the concept, all criteria should be taken into consideration, otherwise the latter will not work. The criteria described above determine the logic and structure of the research.

Theory and practice of collaborative form in education cannot be described comprehensively without outlining its educational function and correlation of education and training.

Launching Stage and Study Process

Technological part of pedagogical work with collaborative learning starts with “Launching”, i.e. when every member of a group is exposed to the course content. Nowadays, there are various versions of the launching stage, which have been applied in educational process.

Methodology approaches used for launching are:

- **Example 1:** The group is divided into two parts, namely one part with previous experience of collaborative learning, the other one without it. As there are students who already know the principles of collaborative learning, they can start working according to teacher’s guidelines. This approach is considered to be the quickest one.

- **Example 2:** The teacher works with students from one part of the group in turns combining it with launching pair work of those who feel already prepared for the latter. When more than a half of the group becomes experienced in cooperation in a pair, teacher starts working with all students, i.e. those who are trained start working with their inexperienced groupmates.
- **Example 3:** Shatalov's method: This approach is usually implemented before exams, in order to revise the course material. The teacher answers students' questions related to the course content. For the next class some students, who volunteered, prepare a couple of exam topics. To prepare a comprehensive presentation, every student should be ready with supportive materials (figures, tables, etc.). An assessment list contains student's name and the topic he/she prepared. Thus, every student should make a presentation of at least one topic to their groupmate. It is obvious that such an approach to assessment takes more time, however, the preparation is efficient. Moreover, initially the course can be targeted at the preparation for exam. It is important to notice, that it is more appropriate for applied subjects.
- **Example 4:** Work with assignments from a text-book: This method involves demonstration work conducted by the first pair Teacher-Student. To perform the first round, the teacher usually chooses the student who excels in problem solving. In front of the audience they complete an assignment according to a certain pattern where the Teacher explains the task and its conditions, then shows ways to solve it. After that they swap roles, namely the Teacher turns into the Student and answers questions, solves the problem and provides explanations. To repeat the pattern, the Teacher can demonstrate the problem solving with some other student, or work with a pair of students, who in turn take roles of Teacher-Student. To make the work more representative, problems and their solving stages can be presented in various learning materials (e.g. white-boards, slides, hand-outs). Then comes the next stage, when all students receive their assignment and make it. The teacher monitors the process. Students, whose work has been assessed, can pair and teach each other applying the pattern presented by the very first pair. At the end of a certain period (both time and topics covered) results are summarized. Each member of the group can report on the following: how many Students he/she has taught, who has been the most efficient Teacher, etc. The last function seems to be the most feasible for collaborative learning.
- **Example 5:** Material interchange method (Mkrtyan, 1992): A group of students is divided into small groups consisting of 5-7 individuals. Each mini-group receives an assignment on a certain topic. The card with an assignment contains 2 problems. Each student works with the teacher, who explains the first task. Then, the student performs the second task and

explains it to the teacher. To speed up the process, the teacher can explain to and discuss the first task with every small group; however, the second task is done individually by each student and assessed by the teacher. Next class small groups interchange their topics. This approach can be efficient in teaching/learning subjects with certain content. The assignments to be made can be both learning and practical. Cases can be introduced. The course can be both theoretical and practical one.

- **Example 6:** Learning new material in small groups: This work can take various forms:
 - First and foremost, the teacher should organize and provide students' unsupervised work with learning materials (text-books, hand-books, reference literature, etc.). Some small groups receive an assignment to research a certain topic, while others work with a chosen textbook and complete a task that can include the following: to make notes, to make a plan/mind map, to formulate questions, etc. Research work with topics is usually more challenging, as students are supposed to search information and, besides textbooks, work with reference literature. Performing these tasks, they can develop such necessary skills as being able to run an experiment, to diagnose, to analyze obtained material, etc. The general design of contact work can be shown as following: I. teacher states an educational objective of the lesson; II. teacher provides orientation on work sequence and distributes printed hand-outs or gives links to sites in the Internet; III. students work in small groups (they appoint tasks, perform them, exchange information, discuss, prepare presentations); IV. representatives from small groups make presentations, while other students ask questions; V. all students analyze whether the educational objective has been accomplished; VI. teacher states further goals (to develop obtained skills, to state further educational aims, etc.).
 - Furthermore, teachers and students can organize and manage seminars, discussions and debates, students' conferences. Among other things, such classes can help first year students to adapt to new educational environment, motivate students to meet challenges while studying and researching and develop competences necessary for a successful individual. It should be highlighted that a preparatory period is really significant. The teacher works with every small group and consults them on class objectives, class design. During the class students can solve a case resulting in some creative product or specific theoretical or practical development. For a teacher it is essential to identify and provide enough quantity of assignments and to provide students with necessary reference information, learning materials, experimental

facilities, equipment, etc. Likewise, it is important to properly assign roles to group members, e.g. a presenter, a researcher, a demonstrator, an interviewer. One of small groups can organize and manage such a class, they will be managers of the process. Among them roles can be assigned in the following way: a host/presenter, experts, etc. The teacher should have a general “scenario” of the class, for example: Introduction made by a host/presenter, presentations made by small groups, questions from other students and experts, experts’ conclusions.

- In addition, students can conduct unsupervised experiments followed by discussion of results. In this case, students work in small groups only part of the class. Depending on the subject, practical part of the class can be presented by a teacher in the form of a video-case, or a demo experiment. Then, small groups work as per an assignment. It can be followed by a group discussion of obtained results and answers provided by students. Overall, this design creates atmosphere of a free discussion, which results in solving significant learning problems. Consequently, effectiveness of the study process increases dramatically.
- **Example 7:** Work in small groups aimed at revising and summarizing study material: Work in small groups can be one of the most efficient methods when topic content is in the focus. Students can monitor each other development in knowledge acquisition. This method is characterized by high tempo of work for all students, as everyone has their rights and responsibilities in compliance with the class design and role assignment. Every student, while communicating with a partner, should be able to express his/her viewpoint, persist in his/her opinion, analyze, compare and generalize. General teaching objective of such a class is to summarize and revise specific topics. The class design can constitute the following: I. Teacher introduces the topic outlining its significance and uses the class guidelines explaining the class design and content; II. Students work in small groups discussing and debating the issues in question, express their opinion, summarize information; in addition, conclusions, that students fail to coordinate, have aftereffect, because in this case students have to find evidence and rationale independently and discuss the issue during the next class with a small group monitor or the teacher. III. Group monitors present summary reports on discussions carried out in small groups evaluating not only quality and level of knowledge, but also errors and mistakes made during the talk, as well as students’ active/passive involvement, their contribution and independence. When this method is implemented, during the third part of the class students can be encouraged to participate in open pair work solving specific problems.

- **Example 8:** Solving problems in small groups. Small groups start their work with evaluating assignments for unsupervised work, which students have received earlier. Then, the teacher provides monitors with a list of new assignments which differ from typical ones and require some knowledge transformation. There are several possible approaches for working in small groups:
 - All students independently complete their task. When they finish, one of the group participants presents his/her handling the problem. If other students have the same results, the whole group takes up the next task. However, the results can differ, then it is necessary to discuss solution methods and reveal errors. Some of the students in a group can fail to keep up with general pace or can experience difficulties, then others should help them in finding correct ways to tackle the problem. If a group is heterogenous (group members differ in academic achievements and performance), more advanced students or a monitor can ask guiding or suggesting questions, so that less able students succeed in finding right ways to solve the problems.
 - Students complete all the assignments independently. Then they discuss and analyze all suggested answers. The teacher should monitor the discussion and pay more attention to the less able students. At the end of the lesson group representatives should present solutions of the most interesting problems, if the problems in question have differed in small groups. The problems being the same or similar for all small groups, the teacher can ask some of the students to show the solution process to the whole group or can give all the students a test.

Technological Basis for the Conducted Experiment

The technology used in the experiment is based on the method developed by practicing educators Zh. F. Kulik and P. K. Kulik at Krasnodar Experimental Center for Advancements in Education (Krasnodar, Russia), which the authors tested during the first empirical stage of the research. The general approach was preserved for higher education settings; however, some modifications were introduced due to specific goals and experimental conditions and in accordance with the subject.

Collaborative education technology involves work in open pairs or small open groups. The work launches in small groups, instructional-learning material can look differently. Instructional material applied in this research is represented by supportive notes (SN). V.F. Shatalov, a well-known Russian teacher, developed and introduced SN teaching method. SN design (topic content in the form of symbols, signs, figures and schemes, dates, names) and its implementation can be viewed as a separate

teaching approach, which can be included into the technology. However, teachers should be ready to conduct great amount of work with the whole instructional-learning material or separate modules in order to introduce the method into practice. There are other options of introducing learning materials, e.g. content-related notes.

Designing any course, it is necessary to define and sort out educational content among topics within modules of the course. The choice is defined by an educational goal, as well as competencies, which the students are supposed to develop throughout the course. It is recommended to divide any module into 4-5 topics depending on the number of face-to-face classes. Each topic includes an informative part and assignments for unsupervised work, the latter comprising reproductive component, skills training, implementing knowledge and competences in a real-like circumstances. Both short-term and long-term components are significant. Each module should finish up with a written or oral test.

The launching stage should be considered closely. Work can be designed depending on detailed topic plan. If topics can be learned in any sequence, then as previous researches show, the most efficient way to launch a new topic is to do it in small groups.

To know relationship among group participants and their academic performance is crucially important during the preparatory period. The best option to arrange students into groups is to obtain a sociological sample. Common questions, open questions concerning the choice of group-mates help to find students who are ready to communicate. Furthermore, if a teacher knows students' academic performance, it will certainly facilitate arrangement of either homogenous or heterogenous small groups (concerning their academic performance and achievements), which will be assigned to solve specific learning tasks. Under any circumstances, at the preparatory stage a teacher can rely on the student whose academic performance is the best. Then, the key issue of this stage is explanation of the prospective activities to all students.

The next stage includes self-preparation and monitoring of those students who will later initiate work in small groups. First, the teacher tests student's knowledge on the results of their unsupervised work and explains their future activity. This consultation period can take as much time as it is necessary to be absolutely ready for starting the next stage.

Work in small groups involves discussion of a few course/module topics simultaneously.

Guidelines for students who launch learning in small groups:

1. Read the topic content;
2. Make a plan/mind map for each of the topic issue;
3. Render the topic content using your Plans/ Supportive Notes;
4. Answer questions/complete a task for unsupervised work;

5. Render the topic content to your teacher.

Having completed the work in small groups, students become experts in some particular topics. Consequently, they can start work in open pairs.

In a class there are several students who are experts in a certain topic. This makes it possible to freely choose your partner, who will monitor “Student” performance level. On completion of the work, “Teacher” fills in grades into a summary list. Each square of the list reflects several results:

1/4 - the student listened to the topic presentation; 2/4 – reproductive knowledge level; 3/4 - the student is able to apply obtained knowledge in practice; 1 – knowledge and competences can be transformed depending on specified conditions.

Due to role change in each open pair, every student learns one new topic, and then a pair split. Students choose new partners themselves. The essential condition of teaching-learning process in open pairs is that students teach the topic which has been the last he/she as a “Student” mastered.

The other option to launch group-based work is possible if topics are learned in strict sequence. Small groups can be heterogeneous, and learning process is based on the principle when an advanced student assists less able one within a small group. Number of small groups, as well as number of topics, can vary. The essence is that the teacher provides more advanced students with wider and deeper information, while the latter help other students to acquire basic knowledge. However, less able

Figure 2. Work in small groups



Collaborative Educational Approach as Contact Work Technology in Higher School

Table 1. Summary list

N°	T1	T2	T3	T4	T5
1					
2					
3					
4					
5					
6					

Figure 3. Work in pairs



students have the right to obtain wider and deeper information. For example, in the group there are an advanced student, a mid-level one and less able student. The logical chain can be presented in the following way: an advanced student works on the topic with teacher's assistance, after that he/she presents it in the small group; though an advanced student is actively involved in only working with a mid-level student, while a less able one is just listening. Having realized that the target student knows the material, the advanced student joins the teacher again to work on the next topic, while the mid-level student works with the less able one. Then the pattern repeats itself. Students themselves fill in the summary list with the results of their work (Table 1).

Empiric Evidence: Transformative Experiment

The research started in 1990s by reviewing the history of the method development and application experience over the 20th century. The first application of experience attained in research was initiated as a teaching experiment at a middle school in Izhevsk, the Udmurtian Republic, Russia, allowing for an overall assessment of research, which resulted in switch of research focus to analysis of psychological mechanisms involved in this type of work. The level of success in learning versus control groups of subjects educated by conventional approach of class-and-lesson system was assessed.

The next step initiated in 2016 involved a transformative experiment undertaken at a university level. It seemed possible, because the analysis and interpretation of results obtained over the previous experience suggested the importance and high potential of this type of contact work in higher education institutions. It was clearly demonstrated that the developmental component of this approach is essential, as it develops professionally significant qualities in prospective psychologists, and other professionals, who require communication skills, established commitments to processes and results of communication.

Research sample included a total of sixty 2nd year undergraduate students majoring in psychology at St. Petersburg State University, Russia. An average of 20 subjects was included into each of the two experimental arms and one control arm. Transformative experiment was conducted in 2016 over 6 months by implementing group-based learning approach in the experimental arms in the context of Educational Psychology discipline.

The aim of the research is as following: to confirm the results of the first empirical stage, when collective forms of class management as an educational technology were introduced and to determine and analyze psychological characteristics required and developed during the study process implementing the technology.

Research objectives are:

Collaborative Educational Approach as Contact Work Technology in Higher School

- To analyze theoretical data and the history of group-based approach in education obtained from Russian and European sources of information pertinent to pair or similar methods of education;
- To establish procedures applicable for teaching humanity subjects as part of professional education through the example of training psychology students;
- To describe the stages of educational process, providing rationalization for the technology concept, providing different options for preparatory and launching stages;
- To confirm the practical relevance of this concept in the context of professional academic training using the example of psychology students as an approach to develop professionally significant qualities (soft skills) together with high efficacy of the educational component.

Originally, the authors expected that implication of group-based training approach can raise the level of expertise in the subject matter, and improve the psychological climate in the group; however, apart from that, the authors gained understanding of the importance and demonstrated the possibilities of developing communication skills, while preserving development potential in higher education settings, including development of professionally significant qualities in prospective professionals (responsibility, critical thinking, creativity, etc.). All mentioned above is of paramount importance for the current educational system in the age of distant education methods determination. Besides, it was important to evaluate psychological climate in each group, and students' ability to effectively cooperate during 2 academic years.

Research methods included analysis of historical data, comprehensive analytical and psychodiagnostic approach using psychology questionnaires. The questionnaires were designed to assess self-esteem, learning aspirations, psychological climate in a group and other psychological features, monitoring of academic progress in a particular subject relative to overall learning success over the reported period (2 years). Teaching materials used as a foundation for the experiment included Educational Psychology course book and original Educational Psychology course curriculum for undergraduate students majoring in psychology.

Didactic material was represented by course module.

Module topics:

Topic 1. Development of L.S. Vygotsky ideas in current theories of developmental teaching

- L.V. Zankov's developmental teaching;
- Theory of developmental teaching by D.B. Elkonin – V.V. Davydov;
- Theory of progressive formation of mental activities by P.Ya. Galperin.

Topic 2. Modern tendencies in teaching/learning

- Traditional instruction;
- Problem-based instruction;
- Programmed and algorithmic instruction.

Topic 3: Modern tendencies in teaching/learning:

- Sign-context instruction;
- Distant learning;
- Personality-centered instruction.

Topic 4. Teacher personality as a condition for efficient instruction

- Pedagogical focus. Types of teacher personality pedagogical centration developed by A.B. Orlov;
- Teacher professional self-consciousness. Self-concept of teacher. Professional deformation;
- Teacher abilities;
- Teacher competences.
- Topic 5. Pedagogical activity
- Individual style in teacher activity;
- Notion of pedagogical communication;
- Pedagogical communication;
- Prerequisites of efficient pedagogical communication;
- Social pedagogical perception.

Assessment questions were developed for each topic. They cover basic level of a topic (reproductive level), questions related to understanding of the topic place in general course (Pedagogical Psychology) and its place in general training course for psychologists (knowledge transformation), practically oriented questions and assignments (solutions in practical situations, study cases). Consequently, having completed the topic research and having completed three levels of assignments, students filled in the summary list. The experiment allowed to obtain the first sample, while the transformative experiment provided the second sample, excluding the sociometric technique. Empiric data, obtained from the transformative experiment, confirm the fact that collaborative learning in small groups/open pairs is really efficient.

Methods applied in the research: questionnaire Sociometry – 3 items; questionnaire Diagnostic evaluation of socio-psychological climate in a work group – 16 items; questionnaire Evaluation of psychologic climate in a study group – 12 items; evaluation of group unity index by C. Seashore “C.E. Seashore psychometric test” – 5 items; questionnaire WAM (wellbeing, activity, mood) – 30 scales; Self-esteem questionnaire – 20 items.

Socio-psychological test Sociometry developed by J. Moreno (only 3 items with 3 options for preferences were applied) was used to evaluate interpersonal emotional relations in the group and examine the following issues: a) to evaluate unity-lack of integration in the group; b) to identify relative authority among group members by such features as affection-dislike (leaders, stars, outcasts); c) to reveal intra-group units with informal leaders. Before starting the test, the study group received guidelines (sociometric warm-up). Teachers explained the aim of the research and showed how to complete tasks. Students were assured that their answers would be considered as privileged information. The objective was to arrange small groups necessary for launching work with open pairs. At the same time, students' academic achievements during 3 previous semesters were obtained, Academic Grade Average was estimated. This was done in order to choose monitors for each small group and to evaluate its membership (homogeneous/heterogenous).

Diagnostic evaluation of socio-psychological climate in a work group: the questionnaire evaluates level of development and psychological climate. It also reveals factors that can be implemented for correction of the latter. The questionnaire can be used in study groups and various work groups. Besides answers to 16 items, information on age, gender, level and duration of education and marital status was obtained.

Evaluation of psychological climate in a study group is related to express-techniques, which are used in pedagogy. It makes it possible to judge, whether the climate in a study group is favorable or unfavorable and to what extent.

C.E. Seashore psychometric test reveals an essential parameter indicating group unity. It reflects the level of group integrity and ability to perform as a coherent whole.

WAM questionnaire represents a paradigm of states and moods. It was developed by researchers from I.M. Sechenov Medical University in 1973 (V. Doskin, V. Lavrentyeva, V. Sharay and M. Miroshnikov). WAM represents a table consisting of 30 pairs of words which reflect psycho-emotional features (wellbeing, activity, mood). The authors of the WAM questionnaire considered that three basic features of functional psycho-emotional state – wellbeing, activity and mood – can be represented by polar points between which continuous sequence of intermediate values exist. However, later researches showed that WAN scales have extremely general character. Factor analysis shows more differentiated scales: wellbeing, stress level, emotional background, motivation.

Self-esteem questionnaire (G.N. Kazantseva) is aimed at evaluating adequacy of self-esteem in order to understand correlation of self-esteem by methods mentioned above.

Findings

The obtained results show that psychological climate in experimental groups improved as compared to baseline data, while in the control group it remained unchanged. Group unity index in experimental group 1 and experimental group 2 stayed the same as compared to the beginning of the experiment (14.55 and 12.73); however, it showed insignificant fall by 0.43 in the control group. Unity index in all three groups is estimated as being above the average, namely it is 11.6. The index has not changed within the “high” and “above average” value limits. Consequently, it is obvious that introduction of a new educational technology has not weaken group unity. For obtaining more representative results, the experiment with small group/open pair learning requires longer period.

Index of psychological climate has increased in group 1 from 0.49 up to 0.54; in group 2 from 0.45 up to 0.55, while in the control group it remained at the same level of 0.58-0.59. While analyzing psychological climate components, it was revealed that behavior component is constant in all three groups and can be diagnosed as contradictive. Emotional and cognitive components are positive in all three groups and are within the range +0.33 and +1; moreover, they are higher in experimental group 2 and constitute 0.86 and 0.6.

Self-esteem among most group members tends to be exaggerated. In all groups up to 60% of group members show this tendency. Differences can be traced in correlation of adequate and low esteem: in both experimental groups they are 35% to 5%, and in the control group – 35% to 0% (65% of students have an inflated self-esteem).

Sociometric parameters highlight lack of integration in determining leaders, who exaggerate their self-esteem. Moreover, they demonstrate lower input parameters in integrity index and index of favorable psychological climate of the study group as compared to other members of the group. Structurally, the following statements made by students can be outlined: “everybody considers his/her opinion to be the important and is intolerant to opinions of group-mates”, “people feel indifferent to both success and failure of group-mates”, “energetic and positive mood dominates”, “it is impossible to initiate and maintain a common cause, everybody is concerned only about their own interests”, “at difficult times students in the group feel daunted and perplexed”. These parameters can explain a highly positive emotional component, however, behavioral one is quite contradictory. Nevertheless, the cognitive component can remain positive, which is confirmed by high academic performance and academic achievements in all three groups, being a little lower in the control group – 4.22, while in group 1 it is 4.53, and in experimental group 2 – 4.39. All three groups succeeded in completing the assessment test in the content of the transformative experiment, showing the average result of 4.6 grades. The test was conducted for all groups at the same time. Traditional frontal lessons with oral presentations were

taken before the exam. Students were highly concentrated and motivated, especially in the control group. The exam procedure and assessment methodology were similar in all groups. It can be assumed that work design, in this case, did not affect the results of assessment.

WAM questionnaire results do not show significant differences in results obtained from the transformative experiment in the experimental groups. Such characteristics as “sense of well-being”, “feeling of being strong”, “energetic”, “agile”, “quick”, “efficient”, “happy”, “joyful”, “cheerful”, “active”, “healthy”, “optimistic”, “full of aspirations”, “satisfied”, “enthusiastic” dominate in both experimental groups.

In comparison to the beginning of the study some disproportion in scales “tense – relaxed”, “calm – agitated”, “feeling good – feeling bad” can be traced; in all three scales the tendency is to give negative evaluation. This tendency is applicable for the control group as well. However, toward the end of the study period students demonstrate significant manifestation of “tension”, “sleepiness”, “pessimism”, “ill-health”, “fatigue” and “anemia”. Differences can not be confirmed by study design, as the control group had traditional frontal-type classes; however, it is possible to assume that the collaborative learning model can relieve stress and study load to some extent.

It is essential to study general parameters of the psychological climate, its components and characteristic features of group-members, as they correlate with parameters indicating possible influence on the general atmosphere in the study group, as well as development of soft skills.

SOLUTIONS AND RECOMMENDATIONS

Collaborative pedagogics, performing educational function and implementing communication among students as a key factor, shows promise and perspective in a modern society. In higher education this approach performs similar functions, while students’ communication modification is based on open pair work activities (Medina-Brakamonte, 2015). Collaborative training approach can be implemented starting from middle school and further. It is essential to realize that this communicative approach is versatile, i.e. can be introduced in any subject area; it is especially efficient when subject baseline information should be introduced, as well as soft skills of a future competent person are in the focus of the educational process.

FUTURE RESEARCH DIRECTIONS

Psychological follow-up in education seems to be essential, the latter can suggest that further researches of personal and professional qualities, e.g. reflection, creative and critical thinking, are necessary. The technology described above can stimulate their development.

It is worth to notice that emotive and motivating components of educational content can be considered from a separate perspective, especially when designing certain courses.

To increase the scale and diversity of psychological follow-up in collaborative work, it is advisable to perform a comparative analysis in various professional spheres of learning.

CONCLUSION

The experimental study shows that students taught in collaborative settings implementing open pair work tend to exhibit higher academic achievement, better high-level reasoning and critical thinking skills, deeper understanding of learned material, greater time on task completion and more creative behavior in class, lower levels of anxiety and stress, greater intrinsic motivation to learn and achieve, greater ability to view situations from others' perspectives, more positive and supportive relationships with peers, and more positive attitudes toward subject areas. Consequently, collaborative learning can be viewed as a strong potential for developing soft skills and professional competencies.

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KEY TERMS AND DEFINITIONS

Open Groups: Small groups of students (no more than 3-4) involved in a studying process where partners change on a completion of an assignment given by a teacher.

Open Pairs: Pairs of students involved in a studying process where partners change on a completion of an assignment given by a teacher.

Soft Skills: Skills that along with professional competencies are essential for professional success (i.e., critical thinking, communication skills, creativity, skills to behave adequately in digital reality).

Teacher-Student: Roles of students in open pairs/groups.

Transformative Experiment: The experiment takes its roots in L.S. Vygotsky's experimental and genetic research method and further developed by B.G. Ananyev as a complex approach. The transformative experiment focuses on mechanisms of an individual's psychic function development. During the experiment individuals develop new traits and evolve those that they already possess (the term applied in in Russian pedagogy).

Unsupervised Activity: Activities of students during a learning process when students perform assignments given by a teacher in pairs or groups without direct control by a teacher.