INTRODUCTION OF MODERN INNOVATIVE LEARNING TECHNOLOGIES INTO TEACHING OF FUNDAMENTAL DISCIPLINES

Summary. The article shows actuality, a theoretical substantiation and methodology of using the modern educational technologies, in particular the competitive groups and the project method, to be during teaching of medical and biological sciences in higher medical education. The advantages and main regularities of the interactive learning methods implementations are shown, which allow to qualitatively transforming theoretical knowledge into professional skills, to explore the role of self-education, self-learning, and self-development. The execution of the projecting activity allows increasing the literacy of students in the field of information and communication technologies. Applying of the most effective pedagogical methods that are the competitive groups and the project method in the teaching of fundamental and scientific disciplines ensures for forming the basis of the professional competences of future doctors.

Keywords: educational technologies, competitive groups, project method, interactive learning.
of the quality of education is become especially relevant. For this, innovative learning technologies are being introduced into the medical education field that are based on competence and person-oriented approaches and are aimed at reproducing the intellectual potential of the nation, exit of national science to the level of world trends and standards. An important task arises – to combine traditional forms of educational process organization and the modern technology in teaching, which are aimed at giving more independence for students in studying of the academic disciplines.

The effective involvement of innovative technologies and teaching methods are contributes to the improvement of the quality students grasp of training material and the activation of their educational and cognitive activities. In the process of interactive training, students learn to skillfully analyse the information received, think critically, thoughtful decision-making, use the acquired knowledge to the unusual situations, what is most characteristic of the activities for physicians.

Group learning, also known as collaborative learning, is a type of teaching method that emphasizes the importance of social interaction and cooperation among students in the classroom. The main task of interactive training is to train a capable to productive synthetic activity specialist.

Recent research and publications. Domestic scientists and teachers devoted their scientific works to the problem of introducing innovative forms of organization of education in higher education, in including medical, in Ukraine as well as abroad [1–6]. Interactive methods contribute to the intensification and optimization of the educational process, and also contribute to the enhancement of educational influences, because during the application of these methods, students become freer in their statements. Students learn to think critically and be ready to solve complex professional problems and situations, as well as to show activity, initiative, demandingness, responsibility for their actions and deeds, humane personality qualities when communicating with other students [7].

According to [8; 9] the learner learns better not ready-made information, but their answers to questions that arise when they need to solve practical problems.

The most common modern educational technologies are the competitive method and the project method.

Students during work in competitive groups [10; 11]:
– gain teamwork skills, constructive discussion, culture of communication and collegiality;
– in the process of step-by-step discussion, interaction, exchange opinions, previously acquired experience, both in their own group and with members of a competitive or corporate group;
– propose their own solution to the problem;
– learn to defend his point of view and listen to others, in the process of finding an optimal solution to a problem, which is the sense of interactive communication and training.

The project method is considered one of the most promising learning methods, because it creates conditions for creative self-realization of those who study, increases motivation to study and promotes the development of intellectual abilities, forms the skills of search and research technology [12; 13].

The project method of teaching arose in the 20s in the USA. This method is associated with the ideas of the humanistic direction in philosophy and education, put forward by the American philosopher and pedagogue J. Dewey, and also his student William H. Kilpatrick. Recently, this method has been paid close attention in many countries of the world. The project method has become widespread and popular due to the rational combination of theoretical knowledge and the possibilities of their practical application for specific problems solving of reality in joint activities [14; 15]. It is known that the Project Method, as well featuring Barrows [16], is a method of student-centered learning, guided – not taught – by tutors (teachers) to solve a problem, which constitutes a stimulus for self-directed learning and the acquisition of new knowledge and skills [16].

The purpose of the article. The article purpose is to reveal the possibilities of using interactive teaching methods in higher medical education.

Presentation of the main material. The modern stage of development of higher medical education puts forward new requirements for the content, methodology and organization of teaching many disciplines in a higher medical facility. This fully applies to the teaching of the discipline “Medical and Biological Physics”. The actual task of modern higher education is the education of a young personality as a comprehensively developed person, capable not only of learning the experience of older generations, but also of enriching it with his own achievements, creating something new with his activity, enriching and improving both life and the field of science with it. Through training, education and manifestation of creativity, a young person reveals to society the highest possibilities and the wealth of his personality.

The use of innovative teaching methods makes it possible to activate students’ cognitive activity, increase their motivation to study, develop self-improvement skills, reveal creative potential, and improve the competence and competitiveness of future specialists with a broad professional outlook.

The aim of interactive learning is to create comfortable learning conditions and a favourable emotional environment, in which every student should feel his success and intellectual ability. In particular, it is about finding such methods of interactive learning, which are based on the collaboration of the teacher and the student, where their interaction is provided, the ability to express their opinions, modelling situations and joint problem solving, which help develop students’ critical thinking and form their independence.

The introduction of innovative teaching methods into the educational process of higher educational institutions help to a deeper understanding and assimilation of theoretical knowledge, practical skills, forms professional thinking, the ability to make reasonable and rational conclusions.

Medical and biological physics in higher medical education is one of the fundamental disciplines. It is forms the basis of biophysical literacy and provides in-depth knowledge about the phenomena of living nature that occur at all levels of its organiza-
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The implementation of the competitive method as an interactive technology in the study of medical and biological physics in higher medical educational institutions contributes to the systematic formation of knowledge, allows to activate interdisciplinary connections, to more fully realize the relationship between theory and practice in educational and professional activities, to strengthen the role of self-education, self-learning, self-development, to purposefully form professionally significant qualities of a highly qualified, competitive health care professional in today's job market.

The essence of this pedagogical methodology is to divide the participants into two or more groups that compete with each other in solving a specific subject problem. Each group develops its own plan to solve this problem. Every group member is defends or complements the collective of the group's opinion.

This method of interactive learning can be implemented through a discussion, debate or "round table", creating a problem situation and solving it through a role-playing game.

At the preparatory stage before lesson, students are announced about the method of conducting practical classes using the competitive method, the topic, content and references for lesson.

Competitive groups should be informed the way that each of them contains students of all low-, middle- and high-levels of knowledge. In this way, all students in the class will be involved in active creative thinking and productive synthetic activity. This distribution helps to low-levels of knowledge students try to achieve the level of middle students and at the same time stimulated the learning of middle and high-levels of knowledge students.

The optimal quantity of students is 3-5 in each group. Such a group has the highest degree of efficiency.

Participants of the competitive group through voting to choose a leader or speaker of the group, who encourages to work, determines a speaker and a registrar who keeps records of findings results. In addition, an expert group of high-levels of knowledge students is formed separately, they work independently, and when the answers are announced by the speakers of each competitive group, they are reviewed and involved in the assessment.

All students of competitive groups receive the same types of tasks, for which you need to give the correct solutions as quickly as possible. Under the guidance of a speaker, students form a collective response to a given task within a competitive group, using the methods of dialogue, polylogue, and discussion.

At the beginning of the practical session, control of the initial level of students’ knowledge is carried out by express testing. Each student from the competitive groups, take a MCQ test, it consist of 10 questions. The test should be answered in around 7 minutes. For this type of work, the student receives: 3 points if he correctly answers 10 questions, 2 points – 8 or 9 questions. 1 point – 6 or 7 questions asked, 0 points – 5 or fewer questions asked. Thus, during the test control, each student gets the first points and the registrar of competitive groups sum up the points for this type of work for the group as a whole.

After that, at the practical lesson, competitive groups consider and solve the main practically-oriented tasks of medium and high difficulty. Assessment of the level of knowledge and practical skills of students is carried out in a point system according to the work program for the discipline.

The use of competitive learning techniques motivates medical students, improves their academic outcomes and may foster the cooperation among students and provide a pleasant classroom environment.

The implementation of the project method as an interactive technology in higher medical educational institutions contributes to the systematic formation of knowledge, allows activating interdisciplinary connections, to more fully realize the relationship between theory and practice in educational and professional activities, to enhance the role of self-education, self-learning, and self-development, to purposefully form professionally significant as a medical specialist.

Projects are classified according to various criteria such as: 1) purpose and nature of project activities: research, construction, informational, educational, artistic, etc.; 2) the level of implementation of interdisciplinary connections: monosubject, interdisciplinary; 3) the nature of partnership interactions between project activity participants: cooperative, competitive; 4) composition of project activity participants: individual, collective (pairs, groups); 5) nature of project coordination: direct, hidden; 6) duration: short, medium duration, long.

The work of the project begins with the choice of the topic of, its type, and the number of participants. The form of education is in small learning groups which are united by a common educational purpose under the indirect guidance of the teacher and cooperation with students. The students are given a number of projects or situations out of which they have to choose the problem they want to solve. Then there is the distribution of tasks by groups, discussion of possible research methods, information search, and creative solutions. The teacher, in the case of the project method of teaching, assumes the role of a guide than a dictator and guides the class through the lesson at their own pace.

The project participants work on the tasks independently within a certain period. Intermediate being to discuss received data is conducted. At the end, projects are defended with the help of multimedia presentations with collective discussion, expertise, conclusions, raising new research problems.

During the organization and implementation of the project, the teacher performs the following functions: 1) helps students in finding sources of information, while being a student himself; 2) coordinates the entire process of working on the project, supports and encourages students to continuously move forward in working on the project, 3) helps, but does not do the work for them At the same time, the teacher must know well the interests of the subjects of study, their capabilities, desires to be competent enough, communicative, tolerant and at the same time have a high creative potential.

During working with projects, students are learning to integrate knowledge from various aca-
demic disciplines, to establish causal relationships, ways of solving the problems, and to predict the outcomes. It contributes to the formation of independence and initiative, responsibility and organization, self-improvement and self-realization of students. Implement the project allows improving the students' literacy in the field of information and communication technologies.

The effectiveness of creative self-realization of medical students during the study of basic disciplines depends on the creation and implementation of organizational and pedagogical conditions that are:

– creation of an intellectual and creative atmosphere in the team, favourable for the creative process, situations that give impetus to the creative activity of students and the development of their creative abilities;

– creation of friendly relations between the teacher and students in the process of joint creative activity when solving complex creative tasks;

– consideration the commitment and the individual interests of students in the process of creative research activity;

– the formation of imaginative thinking in students, which encourages them to independently choose directions, forms and methods of activity;

– student's activation the incentive motives to the creative self-expression.

The teacher's professionalism and competence is certainly an important. Therefore, taking into account the specifics of work related to the development of students' creativity, to achieve effective results, the teacher's features are necessary, such as:

– broad education, high culture, a rich spiritual world, intelligence;

– deep specialty knowledge in combination with methodical skill;

– the ability to empathy, to understand the especially of students' development, their inner world, motives of behaviour;

– scientific and dialectical thinking;

– willingness to independence in the replenishment of knowledge in various fields of science;

– creative and developed imagination;

– communication skills.

Therefore, medical students is working in favorable conditions for the development of their creativity, because the peculiarities of study programs and the construction of the education in medical higher educational institutions provide for the creation of all the conditions necessary for the realization of their own creative potential.

**Conclusion.** At studying basic theoretical disciplines, in particular medical and biological physics, in the system of training doctors, modern interactive technologies play an important role, including the method of competitive groups and the method of projects. These methods provide an opportunity to bring future specialists to a higher level of competence and professionalism, that complies with the European educational space and are nowadays priority trend in the development of higher medical education in Ukraine. The introduction of innovative forms of training is extremely relevant and allows continuing to provide highly qualified educational services in the system of continuous higher medical education.

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