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**INTRODUCTION OF INNOVATIVE TECHNOLOGIES WHILE TEACHING
THE COURSE "MEDICAL INFORMATICS"****ВВЕДЕНИЕ ИННОВАЦИОННЫХ ТЕХНОЛОГИЙ ПРИ ОБУЧЕНИИ КУРСА
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Abstract. *In this paper, we propose a brief overview of innovative pedagogical technologies that can be used during practical classes and in particular while teaching the course "Medical Informatics" at the Department of Biological Physics and Medical Informatics of the Higher State Educational Institution of Ukraine "Bukovinian State Medical University". We have considered the most effective methods, which in our opinion, undoubtedly deserve active introduction into the educational process of higher educational institutions. The introduction of innovative methods will induce students to exercise their imagination and creativity, openly express their opinion; it will help to find an optimal solution to a concrete situational problem in one or another subject field, which is directly related to the future professional activities of students. It is proposed to highlight the main elements of the structure of practical classes, namely: motivation; presentation of the topic and expected learning outcomes; providing the necessary information; practical task – the central part of the lesson; summing up and evaluating of practical tasks.*

Key words: *innovative technology, educational process, training methods, optimizing; medical informatics*

Introduction.

New informative and innovative technologies at the end of the 20-th century h became not only one of the main driving forces of progress in all areas of development of the society, but also a powerful means of learning [1, 2]. The authors of many scientific papers point out and it is impossible to deny it, that in the process of teaching the use of innovative technologies, which include interactive and computer-based ones, allows to improve the learning process and perfect forms and methods of training.

The informative component plays an important role in the modern educational system. A student must learn to understand the flow of information without overloading himself, since one part of it is subject to a thorough assimilation, and the second part is needed only for a short time, assuming a different level of assimilation the material. Special attention is paid to the orientation of students as to the significance of information in the educational space in order to select the necessary



information, transforming it into the form of presentations – sorting, the ability to understand a particular issue – forecasting. To implement the above-mentioned, the teacher should create an appropriate set of methods and techniques to ensure the acquisition of the information component of education.

The activity component aimed at the formation of a creative personality includes such activity of students as educational and cognitive one (perception, systematization, memorizing of information), transformational-creative (performing of non-standard, creative tasks), emotional-evaluative and communicative (communication of students, different methods of consolidation and evaluation of acquired skills, taking into account the personal contribution of each student).

With this form of work, any course, including the course «Medical Informatics», which is taught at the Department of biological physics and medical informatics of Higher State educational establishment of Ukraine «Bukovinian State Medical University» should capture the students' attention, cause their interest and increase motivation, as well as teach them to think and act without waiting for lecturer's advice. The efficiency and the power of influence on students largely depend on the skills and work style of the particular university lecturer. In the training course it is expedient to use the following methods and technologies that activate the student's educational activities [3-6], namely: work in pairs and small groups; student projects – individual and collective; situational games; analysis of arguments «for» and «against»; discussions and debates; solving the problem; «brainstorming», and so on. Particular attention, in the conditions of performing practical tasks on a computer, deserves the development of methods of conducting practical classes and evaluation of students work in pairs.

Main text

In the course «Medical Informatics» it is necessary to teach students to solve the task set before them without assistance and find the optimal solution for it in the process of solving this task on a computer. Students need to learn first of all, to analyze the problem, besides, the student must be able to solve the problem and to know which ways exist for its solution. The choice of the way of a solution is the basic one, i.e. the student has to analyze and understand what solution is the best from the point of view of getting effective results in treatment of diseases or the prediction of events. Thus, while teaching medical informatics special attention should be drawn to the development and consolidation of such student's qualities as: the ability to independently set a task; algorithmic thinking in professional activity; choosing the most effective tools for solving the tasks; ability to evaluate the quality of the work performed; ability to work in pairs.

But the introduction of innovative methods in the educational process put forward certain requirements for the structure of practical classes. In the context of the course «Medical Informatics», which is taught at the Higher State Educational Establishment of Ukraine «Bukovinian State Medical University» for second-year students of such specialties as «Medicine», «Dentistry», «Technology of medical diagnostics and treatment», the lecturer should not only inform and ask students questions, but also must be able to organize their work activities, which would contribute to the creative development of the individual, namely the ability to express



their thoughts without fear and demonstrate non-standard approaches to practical tasks. Instead of "dry" informing, the lecturer can apply activating teaching methods, which will definitely improve the perception and assimilation of the material. Undoubtedly, while explaining and presenting the new material, the lecturer's ability to interest students and to link the presented material with their future professional activity must be the main one when teaching any discipline.

The main task of the lecturer is to raise the interest of students in the topic of practical classes or seminars. Lecturers can choose different forms of work, which, in their turn, should promote the increase of students' motivation, teach them to think independently and act according to circumstances that may vary, due to some or other life events.

The educational process at the department certainly depends on the material and technical equipment, but the effectiveness of assimilating by the students of provided material, primarily depends on the lecturer, namely his knowledge and skills, and directly from the style of work. In the course of teaching the discipline «Medical Informatics» it is expedient to use, in our opinion, such methods of training that will increase the motivation of medical students to study this discipline, and ultimately contribute to an increase in the level of assimilation of material and, accordingly, qualitatively improve the acquired knowledge and skills of students; they are : work in pairs; individual and collective student projects; solving the problem of medical and biological content.

The need to use the method of work in pairs is dictated, first of all, by the number of available places for job, that is, the number of personal computers.

As a rule, computer classes are equipped with computers on an average of 10 pcs that does not correspond to an average number of students – 14 per group, and that is an important reason for implementing this method in the educational process during the teaching of computer disciplines. Certainly this method has some advantages; it gives students the opportunity to acquire skills needed for communication and cooperation. This technique encourages teamwork, the ideas produced in pairs help participants to be useful to each other; expressing opinions and discussing methods for creating a practical task give the students possibility to find the right solution, feel their own capabilities and strengthen them.

When using the method of working in pairs, it is necessary to pay attention to: establishing visual contact – the location of the interlocutor, his gesticulation; promotion of the partner to the cooperation by using gestures and phrases; if necessary, for clearing up the situation to ask clarifying questions; while expressing your thoughts on the question it is necessary to speak clearly, concisely, giving examples; at the time of an active hearing, you should not give advice, evaluate the interlocutor, interrupt, or change the subject of the conversation.

Thus, students acquire the ability to clearly express their thoughts and listen carefully to the arguments of their co-worker.

When using active nonconventional techniques, certain requirements for the structure of the classes should be observed. Practical training should contain the following elements: motivation; presentation of the topic and expected learning outcomes; providing the necessary information; practical task as a the central part of



the lesson; summing up and evaluating practical tasks. Motivation involves focusing students on the problem, as well as directing the lecturer's efforts aimed to increase the interest of students in the topic of practical training. Methods of training can be diverse: a question, an algorithm, a small practical task, and so on.

According to the developed and approved curriculum 20 practical classes and 5 lectures are planned for the specialty «Medicine», the course «Medical Informatics». The majority of practical tasks of the course is studied just in pairs. The lecturer proposes students to break into pairs, at their own discretion choose a student with whom they want to work in a couple to perform practical tasks.

Then the students are informed about the tasks to be carried out and the main directions of work in the process of performing them. Formed pairs in the given time (depending on the difficulty of the task it can be regulated by the lecturer) must fulfill the practical task proposed by the teacher. Students give the results of their work to the lecturer for evaluation. During the evaluation of the students work, the lecturer asks questions to each student from a pair, and in the case of the correct answers and properly performed tasks, the students get the maximum score for the task. There is an improvement in the results of the tasks performed by students who worked in pairs.

However, there are some imperfections in the implementation of this method into the educational process while teaching the discipline "Medical Informatics", namely, the task of the teacher is also a correct differentiation of knowledge and skills of students working in pairs. Quite often there are single students who just want to take advantage of the situation and get a score at the expense of another. Therefore, the implementation process requires direct control from the lecturer and the encouragement of students to work in a "creative duet." Work in a pair implies work of both students, discussion of methods for solving the problem, conducting calculations and substantiating of findings, which are carried out by both of them. Otherwise, it is not a work in a pair. The necessary condition is the implementation of the following statement: «We think and carry out calculations, form conclusions together but answer in turn». A lecturer, certainly has to stimulate and encourage non-standard approaches to the solution of the proposed tasks of the students when they perform their practical tasks.

During the organization of students' work in pairs the lecturer has: to put the student a task that can be solved only with the help of a computer, after an explanation of the major aspects of the topic in the practical task of the corresponding program, it is necessary to propose definite time for fulfilling the task (depending on the difficulty of the task it may be different); to unite students in pairs; to ask the students to discuss their ideas with each other, to implement the ideas working with a computer and using the given by the lecturer material and corresponding software; at the end of the given time, the teacher must determine who of the couple will be the first to answer and it is desirable to immediately determine the time for each of them. It helps students to get used to a clear organization of work in pairs. Previously each pair must reach agreement on the answer or the solution of the task.

The use of active non-traditional pedagogical techniques in the educational process of a higher educational institution will undoubtedly serve to improve



students' perception and assimilation of material, increase the motivation to study subjects not only in computer science, but also in disciplines such as physics, mathematics, etc. which medical students, in particular, mistakenly perceive, as non-core and which they will not need in their future professional activities.

To convince the opposite, to interest and increase the motivation of medical students to study physical and mathematical disciplines should become a priority task for lecturers.

Conclusions.

The use of innovative technologies in teaching the course "Medical Informatics" significantly increases the motivation and interest of medical students to study this discipline. There is a marked increase in the effectiveness of assimilation of educational material by students and the increase in the level of mastering practical skills through the use of the principles of reflection, partnership, originality, creativity and tolerance. With the aim of realization of the main tasks of studying, which include the development of a world view, the formation of skills for speech-mental activity, communication, ability to express, critical thinking, ability to convince and hold a discussion, the lecturers create appropriate conditions under which students take an active part in the process of obtaining knowledge, skills resulting in the formation of creative abilities in accordance with the needs of personality and individual capabilities of students, the growth of their independence and creative activity. For a short period of class, students have the opportunity to recreate aspects of their future professional activities.

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***Аннотация.** В данной работе представлен краткий обзор инновационных технологий, которые могут быть использованы при проведении практических занятий, в частности во время преподавания курса «Медицинская информатика» на кафедре биологической физики и медицинской информатики ВГУЗУ «Буковинский государственный медицинский университет». Рассмотрены наиболее эффективные методы интерактивных технологий,*



по нашему мнению, несомненно, заслуживают активного внедрения в учебный процесс для студентов высших учебных заведений. Предложено выделять основные элементы структуры практического занятия, а именно: мотивация; представления темы и ожидаемых учебных результатов; предоставление необходимой информации практическое задание - центральная часть занятия; подведение итогов и оценки практических задач. Использование инновационных технологий обучения при преподавании курса «Медицинская информатика» значительно повышает мотивацию и повышает заинтересованность студентов-медиков к изучению данной дисциплины. Наблюдается рост эффективности усвоения учебного материала студентами и уровня овладения практическими навыками.

Ключевые слова: интерактивные технологии, учебный процесс, методы обучения, оптимизация.

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