USING INTERACTIVE LEARNING TOOLS IN THE TEACHING OF MEDICAL BIOLOGY

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Introduction. Currently in Ukraine there is a need for competent, mobile, competitive specialists. Traditional learning techniques involve the transfer of ready-to-use information from a teacher to students. Jacques Delors, the President of the UNESCO International Commission on Education in the 21st Century, identified this problem as the current strategy for higher education, based on four basic principles: learning to learn, learning to work, learning to live together, learning to live [1]. The task of the teacher is to approximate educational situations to the future professional activity of the doctor. In conditions of total offensive robotizing and spread of media into the society, it is important to increase the level of motivation of students through the use of an interactive learning environment [2].

Main part. The need for the formation of professional skills and competencies, and particularly, the key competencies is stipulated by the requirement for the expansion of professional recognition, comparability and compatibility of diplomas and qualifications. The concept of “key competencies” defines that they are the “clue”, the basis for other, specific, subject-oriented competencies. In addition, key competencies allow a person who mastered them to be successful in any field of practical activity.

Key competencies are a set of basic knowledge, general (universal) abilities, personal qualities, which enable to achieve positive results in professional and other areas of life [6]. Focusing on new educational goals – competencies – requires not only the changes in the content of the subjects being studied, but also in the methods and forms of organization of the educational process, activation of students’ activities during the class work, the focusing of the topics studied to real life and the search for the solutions to modern problems. Analysis of scientific and pedagogical literature on this topic allows to conclude that the objective needs of society increase the

importance of widespread introduction of individually oriented developmental technologies. They enable the formation and development of certain important qualities, such as student autonomy and responsibility for decision making. Cognitive, creative, communicative, personal activities of students are increased, which help the formation of the behavioural pattern of a competent employee in the labour market and contribute to the socialization of the personality [3].

Implementation of interactive (literally, “inter-act”) methods means to interact, to be in conversation, to have dialogue with anyone. Both interactive and active methods have much in common. In contrast to active methods, interactive ones are focused on the broader interaction of students, not only with the teacher but also with each other. They stimulate the dominance of student activity in the learning process. Thus, the interactive method can be considered as the most modern form of active methods. Interactive methods include the following: discussion, heuristic conversation, “brainstorming”, role-playing and “business” games, training, case studies, project method, group work with illustrative material, discussion of video films, etc.

Here we’ll examine the most important interactive methods in the medical academy in the view of their ability to form key competencies in students during the study of medical biology. Case study is a teaching technique that uses a description of real economic, social, domestic or other problem situations. When working with a case, students are searching and analyzing additional information from various fields of knowledge, including those related to the future of their medical profession.

At the Department of Medical Biology, Pharmacognosy and Botany, students receive a fairly broad and holistic view of the world, and the understanding of a person as an integral part of the world, in particular. Medical biology is a quite extensive science, which forms the foundation of further medical education in students. The course of medical biology includes the following sections: “Molecular and cellular level of organization of life”, “Biology of individual development”, “Patterns of heredity and variability in humans”, “Methods of studying the heredity in humans. Hereditary diseases”, “Medical and biological basis for parasitism”,

“Medical helminthology“, “Medical arachnoentomology“, “The relationship between individual and historical development. Biosphere and Man”. These topics form in students the most comprehensive picture of the world, where human is the main actor. The course reveals mechanisms for disease emergence, starting from molecular to systemic levels. Through the understanding of genetic mechanisms for disease emergence, and due to understanding the human as a part of the ecosystem (other living organisms can cause the disease), the doctor learns to find and identify the causes of various diseases. Thus, it can be said that medical biology is one of the few disciplines in medical education, which provides not only the narrowly specialized knowledge, but a broad understanding of biological processes leading to the development of the disease, thereby making a huge contribution to the formation and expansion of the consciousness of the future physician.

The case study method in relation to other technologies can be imagined as a complex system in which other, less complex methods of cognition are integrated. It includes: modelling, system analysis, problem method, thought experiment, descriptive methods, classifications, discussions, game techniques, etc. Being an interactive method of learning, it is positively accepted by students who see in it a game that provides the mastery of the theoretical provisions and mastering the practical skills to use the teaching material. In modern conditions of economic globalization, a case study can help better understand the psychology of our foreign students, for whom this method forms the basis of their higher education. When applying cases, such skills are formed as identification of the problem, data collection, adoption of alternative solutions [3].

In the process of preparatory work the student must eliminate the gaps in knowledge through a preliminary study of the description of the situation. Students receive additional information from a specifically selected literature or the cases prepared by a teacher. Before the class work, the teacher selects a case, defines the main and auxiliary materials for student preparation, develops a scenario of the class. During the class, the teacher organizes a preliminary discussion of the case, divides the group into subgroups, manages the discussion of the case in subgroups, and

provides students with additional information. After the lesson, the teacher evaluates students' work, decisions taken and questions posed.

In the following paragraphs we'll review the use of a case study method as examplified by the practical lesson in the group of first year students of the medical faculty on the topic: "Hereditary diseases". The teacher divides students into microgroups (teams) of 5 people, and in the each team a captain is assigned – a student who takes responsibility for the team decision.

Each microgroup receives a case and a list of recommended literature. After studying the case materials, students must diagnose a syndrome, namely: Down, Patau, Edwards, Shereshevsky Turner, Triplex X, Klinefelter, "Cri du chat", etc.

To diagnose the chromosomal abnormality, students must:

1. Determine the clinical picture of this anomaly. Students receive photos of people with certain chromosomal diseases, study them visually and describe.

2. Apply genetic research methods, namely:

a) to study chromosomes in peripheral blood lymphocytes, students receive microslides that are examined under a microscope, and then make idiograms of the karyotype;

b) for the study of common indicators and features of skin drawings (dermatoglyphics method), students receive the drawings: finger pads (dactylography); palms (palmoscopy); sole of the feet (plantoscopy).

Based on the revealed features, a diagnosis is established.

3. Characterize chromosomal or genomic mutation (etiological principle):

a) the individuality of an abnormal chromosome or its portion;

b) the type of mutation (monosomy, trisomy, polysomy, full or partial);

c) the degree of mosaicism of the organism;

d) the genotype of the organism;

e) environmental conditions (embryonic or postnatal).

After discussion of the case materials by all students in a team, the captain takes the only correct decision – defines the syndrome. Students are actively learning to

express their thoughts. As a task, the teacher invites students to prepare a presentation for this syndrome for the next lesson.

Conclusion. The use of the case study method has certain limitations, namely: the method takes a lot of time to prepare; there is a risk of conflict situations; insufficient level of student's self-reflection; low informative level of assimilation of new knowledge. However, with the high professional skills of the teacher, the case study method has advantages. The tasks received in the form of cases provide students with much greater opportunity to share their knowledge, experience and ideas, i.e., to learn not only from the teacher, but also from each other [4]. Students receive experience of conducting the discussion, verbal formulation and substantiation of their own thoughts, collective interaction, and independent decision-making [5]. The research method develops the interpersonal skills of the individuals, and enables the transition from passive learning of students to active participation in model or real situations in their professional activity.

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