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Directions for Improving Students' Creative Competence in Higher Medical Educational Institutions

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Abstract: The article considers a number of aspects of improving students' creative competence in medical higher education institutions. In particular, the types of creative competence and their stages of development, areas of improvement are considered. Organizing the teaching process on the basis of ideas, concepts and advanced pedagogical experiences that serve to satisfy the creative interests and needs of students serves to form a meaningful and active approach to the development of creativity. It is necessary to develop creatively oriented educational programs that ensure the effectiveness of the reproductive, creative-research and innovative stages of developing students' creative abilities in higher education institutions and to evaluate changes in the development of students' creative skills and abilities.

Keywords: Competence, assessment, information, creativity, intellectual capacity, infographics, knowledge and skills.

Introduction: The main goal of today's reforms is to create decent living conditions for all citizens living in our country. In this regard, raising a spiritually well-developed person, improving education and enlightenment, and raising a new generation that embodies the idea of national independence are among the priority areas of our state policy. On the path of development of a new Uzbekistan, with new goals and tasks set by the state, today's higher educational institutions are called upon to be leaders in this direction, that is, in changing the socio-pedagogical tasks of higher educational institutions and in distributing the best, advanced innovative pedagogical technologies aimed at solving a number of important socio-economic problems that contribute to the rapid development of the higher education system.

Developing students' creative competence, further strengthening their need for knowledge, and training competent, mature specialists capable of solving the problem by forming independent creative thinking skills are among the important tasks facing the higher education system. Innovative education occupies a special place in the training of personnel with these characteristics in the higher education system.

The concept of "creative pedagogy" has not been used in modern pedagogy for so long. However, the need to establish innovative and creative approaches to the teaching process has ensured the formation of "Creative pedagogy" as an independent subject among the pedagogical disciplines. The basis of this subject is the methodological ideas of such disciplines as the history of pedagogy, general and professional pedagogy, as well as psychology, teaching methods of special subjects, educational technology, and professional ethics.

Determining the competence of students in higher education institutions is an extremely important issue. Because the activity of students in the educational process is closely related to their competence.

In the higher education system, it is necessary to know images (graphs) and information diagrams containing data or other useful information in biochemistry lessons. If these tasks are achieved through the use of infographics, we will prepare the ground for the formation of students' biochemical knowledge and increasing the effectiveness of the lesson. Below, a methodology for analyzing data, comparing images and diagrams in biochemistry textbooks on the topics “Introduction to metabolism. Biochemistry of nutrition” has been developed.

Many scientists have conducted scientific research on the pedagogical foundations of studying science based

on digital technologies, and since these studies differ in the use of information technologies in teaching other subjects, these scientific researches are still ongoing . In turn, if science itself consists of digital technologies, it is natural to ask whether we use them in teaching ourselves. We will try to find answers to these questions through the studies presented below.

The rapid increase in the capabilities of information technologies has had an impact on the education system, as well as on other areas. Today, the use of distance learning forms (webinars, online discussions) at all stages of continuing education has become a requirement of the time. In the higher education system, organizing lessons based on multimedia tools, using interactive whiteboards, and organizing laboratory classes in a virtual environment serves to form the professional competencies of future teachers. Nowadays, the interest of the younger generation in computer technology has become an impetus for the creation of animation and multimedia in the field of biochemistry. As a result, students' skills and qualifications for rapid mastery of the subject increase. The effective use of information and communication technologies facilitates the work of the teacher, and also creates an opportunity for the student to master the subject by performing the necessary experiments using a computer, and helps him to fully master the information on the subject by reviewing what he did not understand.

One of the common methods of teaching biochemistry is to study it without the use of formulaic materials. However, this leads to a mechanical memorization of transformation schemes and names of metabolites, which does not allow us to understand the logic of this discipline. We believe that it is impossible to form correct ideas about biochemical processes without a student mastering the basics of bioorganic chemistry, as well as at least a minimum number of formulas, reactions and metabolic processes . The practice of biochemistry shows that students have difficulties in mastering the content of this discipline, which is mainly due to the insufficient preparation of applicants in chemistry and biology, as well as the need to study and memorize a large amount of theoretical material. The consequence of this can be a loss of cognitive interest in biochemistry among students.

The solution to this problem is presented in some literature, the authors of which propose the use of educational metabolic maps, the introduction of situational tasks into practical exercises, as well as the use of interactive technologies and specially developed ICT training systems. The student can study theoretical material using graphic and textual reference objects and consolidate his knowledge when completing test tasks. At the same time, the development of models of interactive ICT elements that activate the educational and cognitive activity of students requires a lot of time and material resources. An analysis of the available literature shows that the potential of the electronic educational space in the field of biochemistry teaching has not been sufficiently explored. The use of modern interactive ICT elements not only increases students' interest in studying biochemistry, but also significantly transforms the intellectual abilities of students, turning them into real subjects of their professional development. Modern information technologies allow a teacher without programming skills to create very interesting multimedia simulators and educational interactive videos, test students and get feedback to identify the most difficult topics of the course from the students' point of view. In addition, it is important from the point of view of interactivity, the ability of cloud technologies to provide tools for organizing group and collective activities.

There are different opinions about multimedia support for teaching subjects that require the depiction of chemical formulas and complex transformation schemes. Supporters of purely traditional forms of teaching believe that if the teacher consistently depicts the formulas on the blackboard with chalk, the student will be able to master the logic of presenting the material, the consolidation of which involves further work with literature. The creation of mental maps by students in the biochemistry course increases the level of understanding of such a rather complex topic as "Protein metabolism". This topic includes several sections: "Protein digestion", "Amino acid metabolism by the carboxyl group, amino acids and radicals", "Determination of gastric acidity, activity of aminotransferases in blood serum". Didactics on the indicated topics combining, systematizing and classifying the material according to its specific properties or characteristics allows you to create a visual diagram-map.

To increase the effectiveness of educational activities, it is necessary to use innovative technologies for visualizing educational material. One of such technologies is infographics. The didactic effect of using infographics in the lesson is explained by the fact that the cognitive and communicative activities of the participants in the educational process are symbolic in nature. Infographics - a graphic method of transmitting information and knowledge, the task of which is to present complex information in a convenient and understandable way

Infographics (from Latin informatio - to present, explain, present; and from other Greek gaphíkós - writing, gaphō - writing) is a graphic method of

presenting information, the purpose of which is to clearly visualize complex information. One of the forms of graphic and communication design.

Infographics are visualizations of information or ideas aimed at quickly and clearly conveying complex information to the audience. In addition to images, infographics include graphs, diagrams, schemes, tables, maps, lists.

Below, a methodology for organizing a lesson based on digital technology was created for 2nd-year students of the 60910200 - Medical work in the subject of Biochemistry “Introduction to metabolism. Biological membranes”.

We know that each topic is covered according to a plan. In our example, the topic is also covered to students according to a plan. In this case, if the teacher uses one of the digital technology methods, the Infographics method, the groundwork is created for the formation of professional competencies in students. The teacher's plan of the topic to be covered is conveyed to students in the form of an Infographics method.

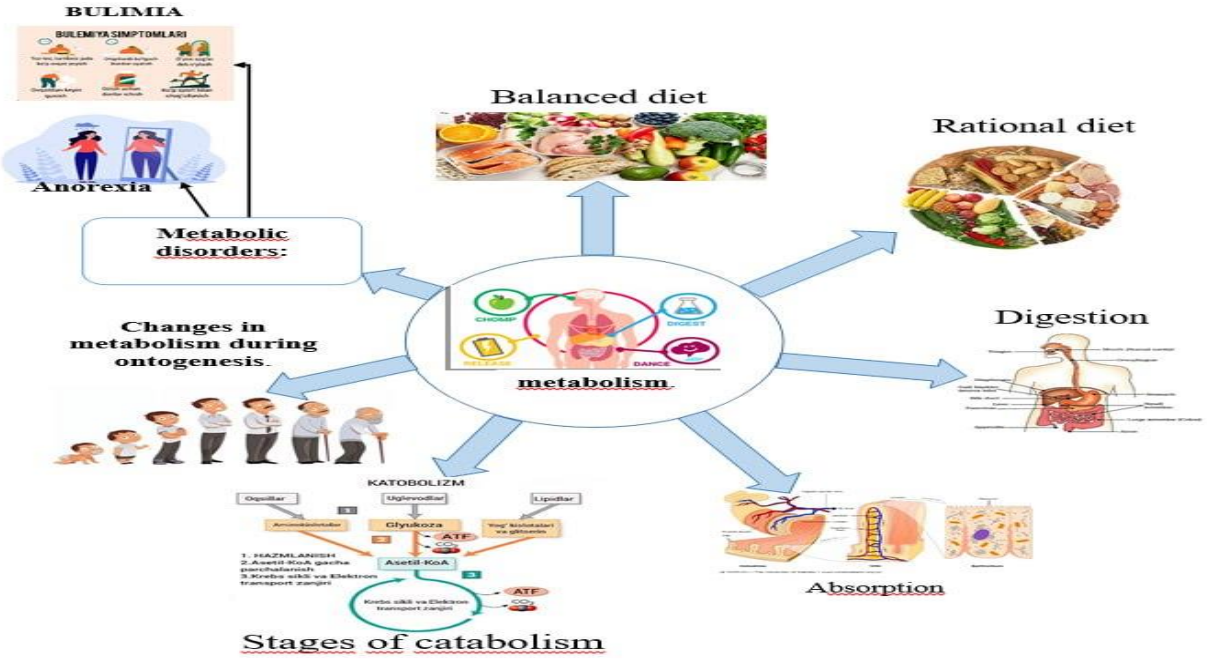

Figure. Outline of the topic “Introduction to Metabolism. Biological Membranes” Infographic style illustration

The teacher begins the lesson based on the infographic-style plan (picture). Each part of the infographic-style plan is illustrated by a computer.

Working on infographics helps to thoroughly study the educational content and develops thinking and critical thinking in students. Due to the rapid expansion of the capabilities of the digital educational environment, we can see that infographics are improving independently based on human needs. The virtual environment, due to its unique characteristics, allows you to create colorful and effective intellectual infographic products. Active use of infographics to visualize educational material helps to improve the quality and effectiveness of educational outcomes.

In conclusion, developing creative competence in students based on digital technology, introducing innovations in educational methodology, including the use of new and effective methods in the educational process, prepares the ground for the development of students' independent thinking, creative approach and problem-solving skills. Infographics play an important role in organizing teaching processes. The capabilities of infographics are aimed at visual perception and consolidation of images. Infographic elements help students develop visual and associative memory. Using infographics, we can demonstrate complex processes occurring in the body, numerical and other information.

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