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MODERN PEDAGOGICAL TECHNOLOGIES IN TEACHING BIOLOGICAL CHEMISTRY

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ABSTRACT

This article examines modern educational technologies in teaching biological chemistry.

KEYWORDS:- Teaching, teaching, biological chemistry, modern technologies, innovative technologies, computer technologies

INTRODUCTION

The word "technology" seems to have taken root quite firmly in the pedagogical vocabulary. This new word "technology" made its way into pedagogy from the exact sciences and technology. What is "new technology of metal processing" or "new technology of information dissemination" is more or less clear. But it was difficult to understand what the "new pedagogical technology" is and how it differs from the program, from the methodology, from the pedagogical system. It is believed that terminological confusion is a common occurrence in theoretical pedagogy. Therefore, practicing teachers choose not only the program and methodology that they use in their work, but also pedagogical technology [1].

A program is, first of all, a document that defines the tasks of upbringing and the content of a child's education, and technology is a toolkit with which these tasks are solved. That is, the program answers the questions "what to do?" and "why do?", and technology - to the question "how to do?" You can only achieve good learning success by increasing interest in your subject. To do this, I use modern pedagogical technologies in the classroom, including information and communication technologies. Information technology of education is a pedagogical technology that uses special methods, software and hardware to work with information. Like all methods, methodological techniques, teaching aids fulfill the trinity of didactic functions, which, in principle, remain unchanged in any subject teaching and perform triune functions: teaching, development, education within the framework of subject activity, taking into account the use of digital educational resources (CER) and information and communication technology (ICT) methodologies.

Learning functions: assimilation of knowledge (about facts, concepts, chamical and planetary processes, laws, chamical theories, methods of activity); improving the quality of knowledge, consolidating previously acquired knowledge, mastering the quality control system of

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knowledge (depth, strength, consistency), including the use of distance learning techniques; mastering the methods of natural science in the subject activity of a biological chemistry teacher using the CRC, ICT; the formation of practical skills when working with natural and virtual objects.

Developmental functions: development of the entire system of cognitive processes: attention, perception, representation, imagination, thinking, memory, speech; development of analytical and synthetic methods of thinking using ICT; development of creative abilities based on the CRC. Educational functions: the formation of a natural-scientific worldview and a natural-scientific style of thinking, the ability to algorithmize one's own activity; the formation of socially valuable motives for learning (in particular, interest in learning); the formation of socially positive elements of behavior; education of strong-willed and moral qualities of the individual. The use of IT in biological chemistry lessons can improve the quality of teaching the subject; reflect the essential aspects of various objects, visibly embodying the principle of visibility; bring to the fore the most important (in terms of educational goals and objectives) characteristics of the studied objects and natural phenomena.

Teaching biological chemistry at school implies the constant accompaniment of the course with a demonstration experiment. However, in a modern school, experimental work on a subject is often difficult due to a lack of study time, lack of modern material and technical equipment. And even if the laboratory of the office is fully equipped with the required instruments and materials, a real experiment requires much more time both for preparation and implementation, and for analysis of the results of work. At the same time, due to its specificity, areal experiment often does not realize its main purpose - to serve as a source of knowledge.

Many chamical processes are complex. Children with imaginative thinking find it difficult to learn abstract generalizations, without a picture they are not able to understand the process, to study the phenomenon. The development of their abstract thinking occurs through images. Multimedia animation models make it possible to form a complete picture of the chamical process in the student's mind, interactive models make it possible to independently “design” the process, correct their mistakes, and self-study. One of the advantages of using multimedia technology in teaching is to improve the quality of education due to the novelty of activities, interest in working with a computer. The use of a computer in the classroom has become a new method of organizing active and meaningful work of students, making the classes more visual and interesting. Information technologies allow: build an open education system that provides each student with his own learning path; change the organization of the learning process of students, forming their systemic thinking; rationally organize the cognitive activity of schoolchildren in the course of the educational process; use computers to individualize the educational process and turn to fundamentally new cognitive means; to study phenomena and processes in the micro- and macroworld, within complex technical and chamical systems, based on the use of computer graphics and modeling; represent, on a scale convenient for study, various physical, chemical, chamical processes that actually occur at a very high or low speed [2].

Unlike conventional technical teaching aids, ICTs allow not only to saturate the student with a large number of ready-made, strictly selected appropriately organized knowledge, but also to develop the intellectual, creative abilities of students, their ability to independently acquire

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new knowledge, and work with various sources of information. In lessons, electives and after school hours, I use electronic textbooks, encyclopedias, etc. They help to solve the following didactic tasks: master the basic knowledge of the subject; systematize the acquired knowledge; develop skills of independent work with educational material using a computer; develop self-control skills; to form motivation for learning in general and for individual subjects in particular; to provide educational and methodological assistance to students in independent work on educational material; prepare the student for the exam, along the way developing, and sometimes forming a number of competencies in him.

ICT technologies are applied at different stages of the lesson: when explaining new material (color drawings and photos, slideshows, video clips, 3D drawings and models, short animations, plot animations, interactive models, interactive drawings, supporting material) as an interactive illustration displayed using a multimedia projector on the screen (currently this is relevant due to the fact that the teacher does not always have tables and diagrams); in case of independent study of educational material by students in the classroom during the performance of a computer experiment according to the conditions specified by the teacher (in the form of worksheets or computer testing), as a result of which a conclusion on the topic under study is obtained; when organizing research activities in the form of laboratory work in combination with computer and real experiments. It should be noted that when using a computer, a student gets much more opportunities for independent planning of experiments, their implementation and analysis of the results in comparison with real laboratory work; when repeating, reinforcing (tasks with a choice of answer, tasks with the need to enter a numerical or verbal answer from the keyboard, thematic sets of tasks, tasks using photos, videos and animations, tasks with a response to the answer, interactive tasks, auxiliary material) and knowledge control (thematic sets of test items with automatic verification, control and diagnostic tests) at the levels of recognition, understanding and application. When students perform virtual laboratory work and experiments at these stages of the lesson, students' motivation increases - they see how the acquired knowledge can be useful in real life; home experiments can be performed by the student on the worksheet with the appropriate adaptation and if there is a study disk for this course at home. The use of interactive models in lessons is of great importance. They allow the student to see processes in a simplified form, to imagine schemes of a particular process or phenomenon. When planning lessons, it is necessary to find the optimal combination of training programs with other (traditional) teaching aids.

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