

## NEW METHODOLOGICAL METHODS OF TEACHING BIOLOGICAL SCIENCE

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**ANNOTATION.** In the course of this research, the features of teaching biology using modern methods were analyzed. The methodology of teaching biology as a pedagogical science is inextricably linked with didactics. Based on the unique characteristics of school biology, the methodology of teaching biology develops theoretical and practical problems of the content, forms, methods and tools of education and training. based on features. It is necessary to cover the ways of turning the student into a subject of a full-fledged learning process in biology lessons.

**Keywords:** method, method, teaching methodology, didactic methods, biology, botany, modern methods, pedagogical approach, psychological state.

**INTRODUCTION.** Educational information technology is a pedagogical technology that uses special methods, software and hardware (film, audio and video, computers, telecommunication networks) to work with information. Like all methods, methodological techniques, teaching aids perform a trinity of didactic functions, which, in principle, remain unchanged in any subject teaching and perform triune functions: training, development, education within the framework of subject activity, taking into account the use of digital educational resources (DER) and information and communication technology (ICT) techniques.

The use of ICT in biology lessons improves the quality of teaching the subject; reflect the essential aspects of various objects, visibly bringing to life the principle of clarity; bring to the fore the most important (from the point of view of educational goals and objectives) characteristics of the objects and natural phenomena being studied. Teaching biology at school involves constantly accompanying the course with demonstration experiments. However, in a modern school, conducting experimental work on a subject is often difficult due to a lack of teaching time and the lack of modern



material and technical equipment. And even if the laboratory office is fully equipped with the required instruments and materials, a real experiment requires much more time both for preparation and conduct, and for analyzing the results of the work. At the same time, due to its specificity, a real experiment often does not realize its main purpose - to serve as a source of knowledge.

Many biological processes are complex. Children with imaginative thinking have a hard time learning abstract generalizations; without a picture they are not able to understand the process or study the phenomenon. The development of their abstract thinking occurs through images. Multimedia animation models allow you to form a holistic picture of the biological process in the student's mind; interactive models make it possible to independently "design" the process, correct your mistakes, and educate yourself. One of the advantages of using multimedia technology in teaching

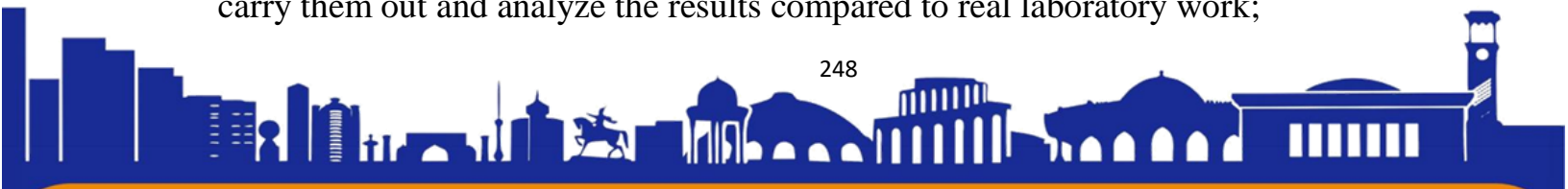
is to improve the quality of learning due to the novelty of the activity and interest in working with a computer. The use of computers in the classroom has become a new method 101 of organizing active and meaningful work for students, making classes more visual and interesting.

I use ICT technologies at various stages of the lesson:

1) when explaining new material (color drawings and photos, slide shows, video clips, 3D drawings and models, short animations, story animations, interactive models, interactive drawings, auxiliary material) as an interactive illustration demonstrated using a multimedia projector on screen (currently this is relevant due to the fact that the teacher does not always have tables and diagrams);

2) when students independently study educational material in class during a computer experiment according to conditions specified by the teacher (in the form of worksheets or computer testing), ultimately obtaining a conclusion on the topic being studied;

3) 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, the student gets much more opportunities to independently plan experiments, carry them out and analyze the results compared to real laboratory work;





4) during repetition, consolidation (tasks with a choice of answers, tasks with the need to enter a numerical or verbal answer from the keyboard, thematic collections of tasks, tasks using photos, videos and animations, tasks with a reaction to the answer, interactive tasks, auxiliary material) and control knowledge (thematic sets of test tasks 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;

5) home experiments can be performed by the student using a worksheet with appropriate adaptation and if he has an educational disk for this course at home [1].

Forms of application of ICT.

Digital educational resources. Using digital

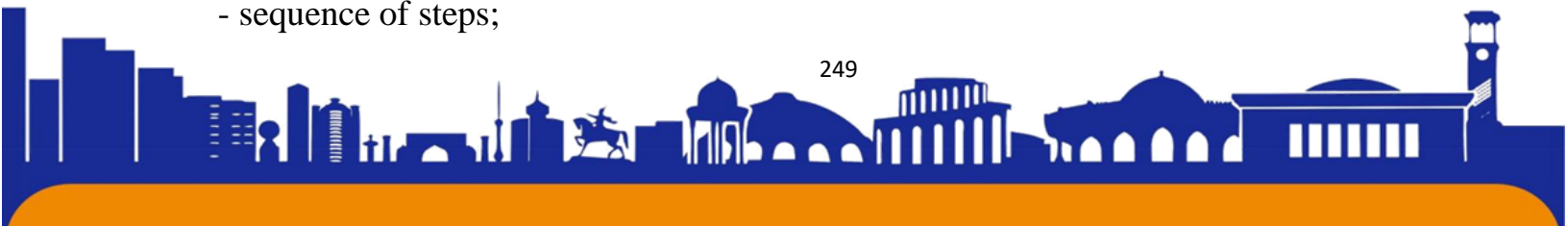
educational resources (ER) as ready-made electronic products allow you to intensify the activities of the teacher and student, improve the quality of teaching the subject, reflect the essential aspects of biological objects, visibly bringing to life the principle of clarity.

**Multimedia presentations.** The use of multimedia presentations makes it possible to present educational material as a system of vivid supporting images filled with comprehensive structured information in an algorithmic order. In this case, various channels of perception are involved, which makes it possible to store information not only in factual, but also in associative form in the long-term memory of students.

Presentation is a form of presenting material in the form of slides, which can contain tables, diagrams, drawings, illustrations, audio and video materials.

#### **Presentation capabilities:**

- demonstration of films, animation;
- selection (of the desired area);
- hyperlinks;
- sequence of steps;



- interactivity;
- movement of objects;
- modeling.

In order to create a presentation, it is necessary to formulate the topic and concept of the lesson; determine the place of the presentation in the lesson. Electronic textbooks and training courses. Electronic textbooks and training courses combine all or several of the above types into a single complex. For example, students are first asked to watch a training course (presentation), then perform a virtual experiment based on the knowledge gained from watching the training course (virtual experiment system). Often at this stage, students also have access to an electronic reference book/encyclopedia for the course being studied, and at the end they must answer a set of questions and/or solve several problems (knowledge control software systems).

**Video and audio materials.** Conducting lessons using video player creates student interest in the subject. Foreign producers of popular science documentaries, such as National Geographic, Discovery, etc., have a huge range of stories to show in biology classes. In 6th and 7th grade classes on the diversity of animals and plants, I use the “Life” series of films, which tell about the lives of reptiles, amphibians, mammals, fish, birds, insects and plants. At the present stage of development of school education, the problem of using computer technologies in the classroom is becoming very important. Information technologies provide a unique opportunity to develop not only the student, but also the teacher. A computer cannot replace the living word of a teacher, but new resources make the work of a modern teacher easier, make it more interesting, effective, and increase students’ motivation to study biology. Advanced video technologies and the use of specially developed computer graphics make it possible to follow the work of organisms as if “from the inside”, to discover their features and mysteries. Which causes a great emotional upsurge and increases the level of learning the material, stimulates initiative and creative thinking. And the result is medalists at Olympiads and rallies.

Thus, the use of ICT in the process of teaching biology increases its effectiveness, makes it more visual, rich (the intensification of the learning process increases),



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contributes to the development of various general educational skills in schoolchildren, improves the quality of learning, and facilitates work in the classroom.

**CONCLUSION.** In conclusion, it can be said that the methods in the educational process determine the activity of the teacher. In order to activate the cognitive activity of students in the study of biology, it is necessary to identify and systematize the knowledge, skills and competences acquired by the students in relation to the previous topic of the lesson, and control the knowledge, skills and competences acquired in relation to the new topic. and assessment, as well as the use of local technologies in the process of learning a new subject is appropriate. Pedagogical technologies at the local level in teaching biology include "Case", "Insert", "Waster", Venn diagram, "Brainstorming", "Working in small groups", "Terminal chain", "Terminal sheet", quick games and the use of various forms of play training is recommended.

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