

## MODERN METHODS OF TEACHING BIOLOGY IN PEDAGOGICAL UNIVERSITIES

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### ABSTRACT

This article reveals modern methods of teaching biology. Many biological processes are characterized by a peculiar complexity. Multimedia animation models make it possible to form a complete picture of the biological process in the student's mind, interactive models make it possible to "design" the process on their own, correct their mistakes, and self-learn. At the present stage of development of school education, the problem of using computer technology in the classroom is of great importance, especially in recent years.

**Keywords:** modern methods, biology teaching, multimedia animation models, computer technologies.

### INTRODUCTION

Information technology of education is a technology that uses special methods, software and hardware (cinema, audio and video, computers) to work with information.

Like all methods, methodological techniques, teaching aids perform the unity of didactic functions, which, in principle, remain unchanged in any subject education and perform triune functions: training, development, education within the framework of subject activities, taking into account the use of digital educational resources and methods of information - communication technologies (ICT).

### MATERIALS AND METHODS

The use of ICT in biology lessons improves the quality of teaching the subject; reflect the essential aspects of various objects, visibly realizing the principle of visibility; to bring to the fore the most important (from the point of view of educational goals and objectives) characteristics of the studied objects and natural phenomena.

Teaching biology at school implies the constant support of the course with a demonstration experiment. However, in a modern school, conducting experimental work on a subject is often difficult due to a lack of study time and a 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 preparing and conducting, 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 assimilating 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 biological process in the student's mind, interactive models make it possible to "design" the process on their own, correct their mistakes, and self-learn.

## RESULTS

One of the advantages of using multimedia technology in education 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 the active and meaningful work of students, making classes more visual and interesting.

ICT technologies are used by me 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 shown 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) in case of independent study of educational material by students in the classroom in the course of performing a computer experiment according to the conditions specified by the teacher (in the form of worksheets or computer testing) with a conclusion on the topic under study;

3) when organizing research activities in the form of laboratory work in combination with a computer and real experiment. At the same time, it should be noted that when using a computer, the student gets much more opportunities for independent planning of experiments, their implementation and analysis of the results compared to real laboratory work;

4) when repeating, fixing (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, the motivation of students increases - they see how the acquired knowledge can be useful in real life;

5) home experiments can be performed by a student using a worksheet with appropriate adaptation and if there is an educational disk for this course at home.

Forms of application of ICT.

Digital educational resources. The use of digital educational resources (DER) as ready-made electronic products makes it possible to intensify the activities of a teacher and a student, improves the quality of teaching a subject, reflects the essential aspects of biological objects, visibly realizing the principle of visibility.

multimedia presentations. The use of multimedia presentations makes it possible to present educational material as a system of bright reference images filled with comprehensive structured information in an algorithmic manner. In this case, various channels of perception are involved, which makes it possible to lay information not only in factographic, but also in associative form in the long-term memory of students.

Presentation is a form of presentation of material in the form of slides, on which tables, diagrams, figures, illustrations, audio and video materials can be presented.

Presentation features:

- 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 invited to view the training course (presentation), then put down a virtual experiment based on the knowledge gained while viewing 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 a video player creates student interest in the subject. Foreign producers of popular science documentaries, such as National Geographic, Discovery, etc., have a huge set of stories to show in biology classes. In grades 6-7, I use the Life series of films in classes on animal and plant diversity, which tells about the life of reptiles, amphibians, mammals, fish, birds, insects and plants.

### DISCUSSION

At the present stage of development of school education, the problem of using computer technology in the classroom is of great importance. Information technology provides a unique opportunity to develop not only the student, but also the teacher. The computer will not be able to replace the living word of the teacher, but new resources make the work of the modern teacher easier, make it more interesting, effective, and increase the motivation of students to study biology.

Advanced video filming technologies and the use of specially designed computer graphics make it possible to follow the work of organisms, as it were, "from the inside", to discover their features and mysteries. That causes a great emotional upsurge and increases the level of assimilation of the material, stimulates initiative and creative thinking. And the result is prize-winners at olympiads and rallies.

### CONCLUSIONS

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

The use of ICT in biology lessons allows me, as a teacher, to be aware of the trends in the development of pedagogical science. Raise the professional level, broaden horizons, and most importantly, it allows you to increase the motivation for learning through an active dialogue between the student and the computer, by orienting learning to success; to acquire basic knowledge of biology, to systematize them; to form the skills of independent work with a

textbook and additional literature. With the use of ICT, the source of information is not only the teacher, but also the student himself.

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