

TECHNOLOGY FOR USING ELECTRONIC EDUCATION IN BIOLOGY CLASSES

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1Methodology of Teaching Exact and Natural Sciences (Biology)

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Abstract

The article presents the role and objectives of digital educational resources, multimedia presentations, internet resources, electronic encyclopedias, didactic materials, and video and audio materials in teaching biology. Information is provided on the use of information and communication technologies in biology and the effective provision of the lesson process.

Keywords: Biology, internet, multimedia, video, audio, didactic materials, digital technologies, mobile technologies.

Introduction

In the high-tech age, distance learning has already become commonplace. Provides simple and convenient ways to access information, starting with the modern era of technology development.

Data exchange is now an integral part of every person's life. Devices such as phones, tablets, computers, and smartphones are becoming the foundation of digital life. With technological progress, electronic devices acquire more and more new processors, allowing them to perform more and more complex tasks, as well as process more and more data streams.

Currently, almost everyone between the ages of 10 and 60 has a mobile device. That's why mobile apps are always relevant. The results of numerous studies show that in most cases, adolescents are only familiar with the gaming aspect of computer life. At the same time, there are no facts of using mobile applications, smartphones, and other smart add-ons to gain additional knowledge in the field of educational motivation.

Learning subjects through mobile applications is a relatively new method and is gaining popularity.

In connection with the above, it is very logical to use the mobile application as an auxiliary element in the educational system.

The original purpose of such software was to quickly and easily check email messages, but noticeable demand led to an increase in applications in various fields.

Students themselves increasingly prefer mobile technologies and regularly use them in their personal lives. Therefore, it is not surprising that it is especially difficult for today's youth to use mobile devices not only for their own needs, but also for learning. A long time ago, there was a trend for students to use mobile devices independently during their studies:



- communicator - mutual exchange of information;
- camera - text capture, etc.;
- Recorder - recording the teacher's voice while delivering a lecture;
- mobile browser - access to websites;
- audio player for listening to audio lectures;
- a stopwatch for conducting experiments;
- means of translating foreign texts.

One of the advantages of using mobile technologies in the learning process is that students have the opportunity to control the information they receive. Moreover, the freedom of choice among the large amount of available knowledge opens up unlimited learning opportunities for the student, which provides him with freedom and independence. Unlike the traditional form of presenting learning materials and assignments, mobile learning utilizes innovative technologies, through which changes occur in the learning process. Modern services such as social media, cloud storage, media data hosting are used to deliver certain types of data, and recently some teachers have begun to use social media, posting useful information there.

It is inevitable to find new and appropriate ways of conveying information to meet the educational needs of modern people. However, this will only be possible if all teachers have a complete knowledge of information and communication technologies (ICT) and are active users.

The development of mobile applications has led to fundamental changes. To successfully implement modernized learning systems, there is a need for technologies that allow a large number of users to independently work with them, providing a good learning environment.

It should be noted that there are both advantages and disadvantages of introducing mobile learning into the educational process. This type of training is realistic in its successful implementation at the stage of its formation. UNESCO scholars highlight a number of advantages of mobile education.

Today, there are about 1.5 billion mobile applications, which is almost three times the number of desktop computers. And such a factor as the relevance of the mobile application platform cannot be ignored. This is because using mobile devices is much more convenient for accessing various types of data. Often, students use smart devices, communicators, and tablet computers not only for games, but also for educational purposes.

In other words, working with a mobile device helps develop a student's technical skills and weakens their ability to communicate.

Over the past decade, the use of computers and new innovative modern information technologies in teaching biology in the education system has been carried out in several key areas. These include computer-assessment of knowledge, the development and development of various types of educational programs, the development of cognitive-logical, subject-specific games, and other types of modern innovative programs that help new students work independently on biology.

These programs and video lessons will greatly help students to strengthen the topics taught during the lesson. New innovative modern information technologies ensure students' knowledge, maturity, and in-depth mastery of subjects.



Biological science plays a significant role in developing human intelligence, attention, fostering determination and willpower to achieve the desired goal, ensuring algorithmic discipline, and expanding thinking. Biology is the foundation of knowledge about the world, and the object of study in biology is plants, animals, fungi, microorganisms, and humans. Biology enters the system of natural sciences and is divided into botany, zoology, anatomy, physiology, cytology, systematics, and paleontology. Therefore, the fields of biochemistry, biophysics, genetics, evolutionary theory, ecology, embryology, molecular biology, biogeocenology are also important in revealing the specific laws of environmental events and phenomena in the biological complex, in the development of production, science and technology.

The teaching of biology in school should be constantly accompanied by a demonstrative experiment. However, experimental classes in science in a modern school are often complicated by a lack of class time and a lack of modern material and technical equipment. Although the laboratory is fully equipped with the necessary equipment and materials, it takes longer both to prepare and conduct a real experiment and to analyze the results of the work. Moreover, due to its uniqueness, real experience often does not realize its main goal - to serve as a source of knowledge. Many biological processes are complex. Children with imaginative thinking experience difficulties in mastering abstract generalization, without a picture, they are unable to understand the process and study the phenomenon. The development of their abstract thinking occurs through images. Multimedia animated models allow for the formation of an integral picture of the biological process in the student's mind, while interactive models allow for the independent "construction" of the process, error correction, and independent work. One of the advantages of using multimedia technologies in the educational process is the novelty of the activity, improving the quality of learning due to interest in working with computers. The use of computers in lessons is becoming a new way to organize active and meaningful student work, making lessons more useful and interesting. Applying ICT technologies at different stages of biology lessons:

I. As an interactive image displayed using a multimedia projector when explaining new material (color images and photographs, slideshow, video clips, 3D images and models, short animations, plot animations, interactive models, interactive drawings, auxiliary materials).

II. During the independent study of educational materials, students conduct a computer experiment during the lesson in accordance with the conditions established by the teacher (in the form of a work sheet or computer test), resulting in a conclusion on the topic being studied;

III. Organization of scientific research in the form of laboratory work in conjunction with a computer and real experiment. It should be noted that when using a computer, the student has more opportunities for self-planning experiments, their implementation, and comparison of results with real laboratory work.

IV. Knowledge at the level of repetition, correction (tasks with answer selection, tasks with the need to enter a digital or spoken answer from the keyboard, assignments using thematic sets, photographs, videos and animations, tasks with a reaction to the answer, interactive assignments, auxiliary materials) and control recognition, understanding and application (automatic verification, thematic sets of test assignments with diagnostic tests). At these stages



of the lesson, when students conduct virtual laboratory work and experiments, students' motivation increases - they see how knowledge acquired in real life helps them;

It is no secret that most modern schoolchildren use Internet sources as a source of information, rather than literary sources. This has great advantages, at least saving children's personal time. The teacher's task is to teach students to correctly work with the information they find, to be able to compile it, to create logical circles, to ask questions, and to highlight the main thing. For example, when studying the topic "The Origin of Living Creatures," children receive an initial assignment to search for information on the Internet. Tasks can be both individual and group in nature. If time allows you to work best, you can focus on conveying messages to children on their topics and offer them, undoubtedly, this form is the result of a focused work of long-term information work with students. When organizing research activities, Internet resources become integral in the search for theoretical information, familiarization with other research projects, and finally, on the Internet, you can find information about the competitions and participate in them.

Therefore, the application of ICT in the process of teaching biology increases its effectiveness, makes it more visual, rich (increases the intensity of the learning process), helps to develop various general education skills in schoolchildren, improves the quality of the lesson, and facilitates work in the lesson

Summarizing all of the above, it can be said that mobile education cannot replace traditional education, but it can be used as an integral part of additional and blended learning in the educational process in higher education. The active use of mobile learning does not aim to replace computers with portable gadgets, but rather expands the learning environment and fills it with more interesting and relevant methods, which are increasingly preferred by students.

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