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# THE ROLE OF MODERN TECHNOLOGIES IN TEACHING PHYSICS

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## ABSTRACT

In connection with the development of modern technologies of the XXI century, new methods of organizing lessons are being formed. With the help of these technologies, students are shown physical processes, electronic textbooks, animation, virtual laboratories. In particular, the widespread use of virtual laboratories, animation, electronic textbooks, as well as multimedia tools increases the effectiveness of teaching students, develops their independent thinking and creativity.

**Keywords:** analysis, inductive method, abstract thinking, visual method, interactivity, multimedia, modeling, experimental.

## INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

The rapid development of computer technology and the expansion of its functionality allows the use of modern technologies at all stages of the educational process.

Individualization of the learning process,

As a means of illustrating the educational process (presentation),

The widest resources can be used as a way to search for information (Internet), etc.

Physics is an experimental science that is always taught together with a visual experiment. The use of modern technologies in the lecture significantly expanded the possibilities of the experiment, which allowed us to reveal a wide range of processes and phenomena. This, in turn, broadens the horizons of students, develops logical thinking and creativity

When using modern technologies in the learning process, information is presented not in the form of a static, sound picture, but in the form of a dynamic video and sound scale, which significantly increases the efficiency of mastering the material. Interactive elements of the curricula make it possible to move from passive to active assimilation, since students get the opportunity to independently model phenomena and processes, perceive information not linearly, but with a return. If necessary, the creation of virtual accumulators of experience forms students' knowledge, skills and abilities.

Advantages of presentations: the lesson will be clear; the information reflected on the slides will be perceived quickly and easily, the quality of learning will increase.

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Presentations are demonstrated by the teacher himself directly in the physical office using a portable multimedia projector connected to a computer. The image is projected onto a large wall screen. Compared to the traditional form of teaching a lesson, which forces the teacher to constantly turn to chalk and blackboard, the use of such scenarios frees up a significant amount of time that can be used for further explanation of the material. It is important to note that a computer demonstration of physical phenomena is considered not as a substitute for a real physical demonstration, but as its complement.

Thus, modern pedagogical technologies combined with modern information technologies can significantly improve the efficiency of the educational process, solve the tasks facing the educational institution for the education of a comprehensively developed, creative free personality.

Today, in a physics lesson, it is necessary to provide a sufficient amount of information with minimal study hours to guarantee full mastery of the basics. Profiling of secondary schools also requires the active introduction of new forms and methods of teaching. To this end, effectively use the achievements of modern technologies in the educational process.

In addition, the use of electronic means of communication when working on projects (then the work will be presented at the school at an exhibition held as part of the Week of Natural Sciences; the winners will be awarded certificates, and all participants will receive grades).

It is obvious that in a modern school, a computer cannot solve all problems, it remains only a multifunctional technical means of teaching. Modern pedagogical technologies and innovations are of great importance in the educational process, allowing not only to "invest" a certain stock of knowledge in each student, but, above all, to create conditions for the manifestation of cognitive activity of students.

The introduction of computer technologies in education increases the overall level of the educational process, increases the motivation of students to acquire knowledge and cognitive activity, constantly supports teachers, including me, in a state of creative search for didactic innovations.

The relevance of the project is due to:

1. The need to bridge the gap between the modern level of teaching physics at school and the didactic capabilities of information society technologies.

2. The need to create software and methodological support for teaching physics to schoolchildren using modern technologies.

The following contradictions are inherent in the modern system of teaching physics:

1. Between the didactic potential of information society technologies and the existing level of physics teaching at school.

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2. Between the educational needs of the information society and the lack of necessary software and methodological support for teaching schoolchildren.

The above contradictions allow us to formulate a project task, which consists in substantiating and building a new effective approach to teaching physics based on modern technologies in the existing system.

Project objective:

To show future teachers effective means of teaching the use of modern technologies and the effectiveness of their application.

The educational environment developed with the use of educational information technologies creates a system of teaching physics, which not only generalizes, concretizes, systematizes knowledge of physics, but also increases the motivation of students to study this subject.

The most important goals of designing the educational process using educational and information technologies are to increase students' motivation, automate the educational process, develop students' thinking, creative thinking, etc.

This goal is expected to be achieved by solving the following tasks:

The development of the personality of the future teacher, his preparation for independent industrial activity in the conditions of modern information society (the development of thinking, aesthetic education, the formation of the ability to make the right decisions or offer options in a difficult situation) and the development of skills for the implementation of experimental research activities;

- implementation of public order through the informatization of modern society;
- activation of the educational process at all stages of the system of continuing education;
- improving the efficiency and quality of the educational process by introducing the capabilities of modern technologies;
- increasing cognitive activity with the help of modern technologies;
- deepening interdisciplinary ties through the use of modern technologies;
- implementation of the ideas of open learning based on the use of network technologies.

From this we get the following result:

- the ability of a teacher to design an educational environment; the ability to implement fundamentally new forms and methods of teaching; additional opportunities for orientation and maintenance of student personality development; organization of creative search and joint activities of students and teachers; development and selection of the best educational programs; use of intellectual forms of work
- students-using non-traditional sources of information; improving the efficiency of independent work; there are completely new opportunities for creativity, acquisition and consolidation of various professional skills;

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-parents have the opportunity to participate in the educational process, starting from tracking the level of academic performance, ending with participation in joint projects.

In the education system, multimedia electronic literature, lectures are virtual laboratory work, various animation programs are special programs that will be needed when creating slides. The education system has ready-made models in the above programs, in which the user can widely use several categories of work (laboratory, in the analysis of fire safety issues, animation at presentation lectures) by entering initial parameters. Examples of programs that allow you to simulate physical processes are: matcad, MATLAB, Maple, Crocodile, Physics, Electronics Workbench and other software packages. The use of computer models in learning processes using the capabilities of modern information technologies is bearing fruit. For computer modeling of physical processes, physical knowledge from modern information technologies is widely used. Summing up, we can say that conducting physical experiments, organizing the display of stages on a computer in an animated form is a visual, interesting and useful activity for students, contributing to good memorization. Consequently, information technologies do a good job of displaying physical phenomena.

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