

MODERN METHODS OF PHYSICS

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Abstract: This article presents new approaches and methods for modern schools.

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Introduction: New trends came with the new 21st century and new approaches to age-old problems appeared in education: how and what to teach, new pedagogical technologies, techniques, methods, new views on the relationship between the educator and the educated, the teacher and the student. Today, it is especially important to develop the cognitive activity of students, to form an interest in the process of cognition, in ways to search, assimilate, process and apply information, which would allow students to be the subject of learning, to easily navigate in today's rapidly changing world.

Methods: Modern teaching at school is faced with the problem of reducing the interest of students in the study of subjects. Such a school subject as physics has long been classified by society as the most difficult. The teacher is faced with the task of arousing interest, not scaring off the children with the complexity of the subject, especially at the initial stage of studying the course of physics.

Getting acquainted with a variety of modern pedagogical technologies in the areas of modernization, I chose technologies based on the activation and intensification of students' activities. The principle of the child's activity in the learning process has been and remains one of the main ones.

By this concept, I mean such a quality of activity, which is characterized by a high level of motivation, a conscious need for the assimilation of knowledge and skills, and performance.

Our school has computers, there is access to the Internet, and more and more computers are being purchased by families of students. This contributes to the introduction of new pedagogical technologies in the educational process.

Trying to increase the effectiveness of lessons, I use innovative technologies: problem-based learning, credit system, elements of level differentiation technology, health-saving technologies.

The use of modern educational technologies allows you to rationally organize the learning process, achieve good results:

- Problem based learning.
- Information and communication technologies.
- Research and design activities.
- Interactive learning.
- Solving creative problems.

For a number of years in my lessons I have been using elements of problem-based learning.

Traditional education, as a rule, provides students with a system of knowledge and develops memory, but is little aimed at developing thinking, skills of independent activity.

Problem-based learning eliminates these shortcomings, it activates the mental activity of students, forms a cognitive interest. Depending on the nature of the problem statement, there are several types of situations. In the process of explaining new material, I most often use situations of inconsistency and surprise.

Results and Discussion: I have accumulated, generalized and systematized tasks of a problem orientation in various sections of the physics course. For example, if a student is engaged in tourism, then in the real conditions of a hike, he can get a holistic view of the physical laws that will allow him to ensure safety in extreme situations: what kind of pot and how should be placed over the fire so that the water boils faster; what knot should be tied on a rope in order to provide reliable insurance; what size and what weight should the stove be in order to ensure safety when skiing, etc.

The use of elements of problem-based learning allows you to create conditions for the creative mental work of students in the classroom. There is no need for mindless memorization of a large amount of educational material. The time for preparing homework is reduced, because The main part of the educational material is learned in the classroom.

The degree of cognitive activity of students in the classroom depends on what methods the teacher uses in the classroom. Problem-based learning acts as one of the most important pedagogical technologies that ensures the emergence of a motivational component of the educational and cognitive competence of students in physics lessons.

This technology attracts me with its originality, opens up great practical opportunities for me, contributes to the development of creativity, overcoming the passivity of students in the classroom, and improving the quality of knowledge in the subject.

When using this technology, I implement the principle of knowledge correction and their level differentiation, which allows students to learn not only the standard of education, but also to move to a higher level. I build each lesson in such a way that the assimilation of the material goes on 3 levels: reproductive, constructive and creative. I am expanding my upbringing and educational activities, using information and communication technologies in educational and extracurricular activities.

Computer technologies in physics lessons suggest:

- the use of multimedia technologies in the study of educational material;
- intensive use of computers as a tool for the daily educational work of students and teachers;
- changing the content of teaching physics;
- implementation of interdisciplinary connections between physics and other academic subjects;
- development of methods for independent search and research work of students in the course of implementation of educational telecommunication projects;
- teaching students the method of collective problem solving;
- search and processing of information within the studied material using the Internet;
- use of spreadsheets to solve problems;
- conducting virtual workshops and laboratory work;
- training teachers to work with new content, new methods and organizational forms of teaching.

Computer communication allows access to virtually unlimited arrays of information stored in centralized data banks. This makes it possible, when organizing the educational process, to rely on the entire stock of knowledge available to the inhabitant of the "information society".

The project activity of students is a new learning technology. Unlike the traditional one, it allows you to move from learning as a process of memorization to independent cognitive activity; from focusing on the average student to differentiated, personalized learning; from the uncertainty and vagueness of the prospects for "friendship" with physics to a serious motivation for activities in the field of physics or engineering.

The project is an independent creative work of the student, starting from the idea and ending with the material embodiment.

Everyone is interested in the implementation of projects: the student is busy working and developing his creative potential (applying knowledge in new situations) with the prospect of getting several grades and a successful certification in physics (one

of the most difficult subjects), and finally, with the prospect of replenishing the Portfolio; the teacher is interested in increasing the knowledge and intelligence of students, their employment in creativity; parents - in the successful academic performance of their child, in the future, to raise a child with a smart head, but also with "golden" hands.

In a new, reformed school, a student should be interested and comfortable in studying, a child will come to such a school with pleasure, looking forward to the joy of meeting with peers and teachers.

Conclusion: The introduction of new educational technologies in the educational process changes the teaching methods, allows, along with traditional methods, techniques and methods, to use modeling of physical processes, animations, a personal computer, which contribute to the creation of visual images at the level of essence in the classroom, interdisciplinary integration of knowledge, creative development of thinking, activating learning activities of students.

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