

NEW APPROACHES AND METHODS OF TEACHING PHYSICS IN A MODERN SCHOOL

Abdurahmanova Inobatkhon

School No. 30 of Danghara district, Fergana region of the Republic of Uzbekistan, teacher of physics

ARTICLE INFO.

Keywords: method, teaching, physics, modern school.

Annotatsiya

This article is devoted to new approaches and methods of teaching physics in a modern school. Information technologies increase the informativeness of the lesson, the effectiveness of teaching, give the lesson dynamism and expressiveness.

<http://www.gospodarkainnowacje.pl/> © 2023 LWAB.

Modern society sets completely different tasks for a person than 10-15 years ago. The amount of information doubles every two years. Even a well-trained student finds it difficult to enter the modern world, new thinking is needed, a new look at all the changes that are taking place around us. In modern schools, more attention has been paid not so much to the knowledge gained in the educational process, but to the process of knowledge extraction. Only those who have established this or that pattern themselves were able to find the cause of the phenomenon, the process has a greater chance to harmoniously enter the modern world. In the process of forming a unified picture of the world, the subjects of the natural science cycle play a dominant role, it is in the teaching of these subjects that more changes occur. The template presentation of the material does not feed emotions, as a result, students lose interest.

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

Modern teaching at school faces the problem of reducing students' interest in studying subjects. Such a school subject as physics has long been classified by society as the most difficult. The task of the teacher is to arouse interest, not to scare off the children with the complexity of the subject, especially at the initial stage of studying the physics course.

Getting acquainted with a lot 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, effectiveness.

There are computers in our school, there is access to the Internet, more and more computers are being

purchased in the families of students. This contributes to the introduction of new pedagogical technologies in the educational process. Trying to improve the effectiveness of lessons, I use innovative technologies: problem-based learning, a credit system, elements of technology of level differentiation, health-saving technologies.

The use of modern educational technologies makes it possible to rationally organize the learning process, achieve good results [1]:

- Problem-based learning.
- Information and communication technologies.
- Research and project activities.
- Interactive learning.
- Solving creative tasks.

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 little is aimed at developing thinking and independent activity skills.

Problem-based learning eliminates these shortcomings, it activates the mental activity of students, forms 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 apply situations of inconsistency and surprise.

I have accumulated, generalized and systematized problem-oriented tasks 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 idea of the physical laws that will allow him to ensure safety in extreme situations: which pot and how to place it over the fire so that the water boils faster; which knot should be tied on a rope to provide reliable insurance; what size and what there should be a stove in the mass to ensure safety when making a ski trip, etc.

The use of elements of problem-based learning allows you to create conditions for creative mental work of students in the classroom. There is no need to memorize a large amount of educational material without thinking. The time for homework preparation is reduced, since the main part of the educational material is absorbed in the lesson.

The degree of cognitive activity of students in the classroom depends on what methods the teacher uses in the lesson [2]. Problem-based learning acts as one of the most important pedagogical technologies that ensure the emergence of a motivational component of the educational and cognitive competence of students in physics lessons. This technology attracts me with its unconventionality, opens up great practical opportunities for me, promotes the development of creativity, overcoming the passivity of students in the classroom, and improving the quality of knowledge on the subject.

When using this technology, I implement the principle of knowledge correction and their level differentiation, which makes it possible for students to assimilate not only the standard of education, but also to advance to a higher level. I build each lesson in such a way that the assimilation of the material goes on at 3 levels: reproductive, constructive and creative.

I am expanding my educational and educational activities, using information and communication technologies in educational and extracurricular activities

Computer technologies in physics lessons assume:

- the use of multimedia technologies in the study of educational material;
- intensive use of computers as a tool of daily educational work of students and teachers;

- changing the content of physics education;
- implementation of interdisciplinary connections of physics with other academic subjects;
- development of methods of independent search and research work of students during the implementation of educational telecommunication projects;
- teaching students by the method of collective problem solving;
- search and processing of information within the framework of the studied material using the Internet;
- using spreadsheets to solve problems;
- conducting virtual workshops and laboratory work;
- Preparing teachers to work with new content, new methods and organizational forms of education.

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

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

The project is an independent creative work of the student, starting from the idea 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 difficult subjects), finally, with the prospect of replenishing the Portfolio; the teacher is interested in increasing the knowledge and intelligence of students, their employment with creativity; parents – in the successful academic performance of their child, in the future to raise a child with a smart head, and also with "golden" hands.

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

The introduction of new educational technologies into the educational process changes the teaching methodology, 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 in the classroom at the level of essence, interdisciplinary integration of knowledge, creative development of thinking, activating the educational activities of students.

List of literature

1. Golish L.V. Modern learning technologies: content, design and implementation. An experimental methodological guide from the series "What does a student need to know about modern learning technologies?". Tashkent, SPO Development Institute, 2001. pp. 13-15.
2. Sadykov N. The business card of the textbook. // Teacher of Uzbekistan, 28.04.99.
3. Shamaeva V.I. Modern information technologies in physics lessons. [electronic resource]. Access mode: www.cctec.ru/shcool/singapai/dok/Sovrem_informac_tehnologii.doc / (accessed: 19.11.2018).