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USE OF INNOVATIVE TECHNOLOGIES AT PHYSICS LESSONS

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Abstract
The article highlights the role and importance of the use of innovative technologies in the teaching of repetition and generalization in the teaching of physics. As well the article is devoted to the issues of effectiveness of education through conducting lessons implementing modern pedagogical technologies.

Keywords: repetition, generalization, levels of mastery, mass, force, weight, Newton's laws.

Introduction

By increasing the efficiency of the educational process, the foundation will be laid for further development and strengthening of future development. Every teacher knows that a lesson is a basic form of the educational process. Therefore, the teacher, first of all, thinks about passing the lesson and improving the lesson, is searched. Today, at a time when educational reforms are underway in the country, improving the quality of teaching mathematics and science, substantiating the level of mastery of students based on pedagogical technologies by clearly defining educational, pedagogical, developmental and interest goals at modern lessons and further active, creative, innovative ideas young people need to be educated. It is known that the definition of content in modern physics lessons is organized and conducted on the basis of state educational standards, curriculum, textbooks and manuals, information from Internet sources. In order for the content of physics to correspond to the level of scientific and technical progress, advanced production technologies, culture of the society, the physics teacher must choose specific material from different sources, get acquainted with the problems in the field, organize their study without violating the logic of the subject. In doing so, he must compare the material he has identified with both the syllabus and the textbook.

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Material and Methods

The most important main issues that need to be studied and mastered, and the materials presented in the form of information are identified. Depending on their level of complexity, the essence of physical concepts, quantities, mathematical expressions, and experiments are determined. In modern review and generalization lessons from the basics of physics, the material should be selected in such a way that the knowledge is not ready in the form of conclusions, but allows students to independently find the right answer to the questions posed. In creating such conditions, it is necessary to be able to use and apply innovative pedagogical technologies, to take into account the nature of science. It is known that innovation (innovation) is the introduction of news. A.I. Prigogin understands innovation as purposeful changes that introduce new, relatively stable elements into a particular social unit - organization, population, society, group, which is an innovative activity. A new direction in the development of education - the term "innovative pedagogy" and its specific research appeared in Western Europe and the United States in the 60s of the twentieth century [1].

Given that students majoring in physics and mathematics will become scientists or engineers in the future, it is not enough to organize practical training in this form. In order for students to gain an excellent knowledge of physics, they need to present quality and assessment issues in addition to traditional ones in the classroom.

Qualitative issues require a correct understanding of the underlying process and an understanding and description of the interdependence of processes based on physical laws. [2]

Discussion

Physics is always moving from theory to practice. Therefore, the lesson can be presented in the form of a laboratory without directly explaining the topic, and then the question of the content and on what basis it is based can be brought to the attention of students. Or by placing the tools randomly on the lab table, students are asked to choose the tools they need for the job. This method can be used in small groups using interactive methods.

So, there are some problems with the use of innovative pedagogical technologies in the organization and conduct of repetition and generalization lessons in physics in general secondary schools. Including:

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-Adequacy of information about physical quantities, concepts, mathematical expressions, formulas, units, measuring instruments, which should be systematized, determined and revived in the classes of physics through repetition and generalization, should be taught on the basis of new methods. should be remembered for a long time and be sufficient for use in the subsequent sections of physics;

- The need to use new methods of an analytical nature, which serve to distinguish similar concepts (body weight, gravity, body mass);

- It is necessary to restore the known rules and apply them to the desired result;

- Given that the methods used in the lessons of repetition and generalization are based on the topics covered, the lessons should not be boring, but require high levels of mastery, independent inquiry, critical thinking, and the development of creative activity in students. In this case, the basic concepts taught in the "Dynamics Department" in our example, body mass, body weight, interaction, force, gravity, relativity of motion, etc., are expanded and deepened in all other branches of physics.

The following handouts are also helpful and effective for using in Physics classes.

1 "Sound sources". Sound appears in sound sources (musical instruments, loudspeakers, human vocal cords, etc.). To learn how the sound is formed, we take a metal ruler and place it on the edge of the desk with the tip protruding long. We hold the rest by hand. When we release the long end, we see that the line tip is starting to vibrate. Does it make a sound? We repeat the experiment by pushing the tip of the ruler over the desk. In this case, a sound is heard. As we reduce the vibrating part of the ruler, the sound becomes more audible. This occurs when the ruler vibrates at least 16 times per second. Consequently, objects that can vibrate more than 16 times per second can be sound sources.

2 “Concepts and magnitudes that characterize vibration." Any repetitive action is called a repulsive action. The number of oscillations per second is called the oscillation frequency. The frequency is denoted by the letter n (new). If an object oscillates 1 time in 1 second, its frequency is assumed to be 1 Hertz (Gts). 1 Gts = 1 / second The human ear can sense sounds from 16 Gts to 20,000 Gts. 16 Gts and Ki

The less sounds are called infrared and ultrasound over 20,000 Gts. Ultrasound is heard by dogs, horses and some other animals.

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3 "Camerton". A device that emits sound at a specific frequency is called a tuning fork. The tuning fork was invented in 1711 by the English musician J. Shorom and was used to tune musical instruments. The tuning fork consists of a two-horned metal rod with a handle in the middle. When a rubber stick hits a branch of the tuning fork, a certain sound is heard. To make sure the tuning fork vibrates, we hang a light balloon on the string and touch it to the second branch of the tuning fork. You can see that the balloon is also vibrating when a sound comes from the tuning fork. It is mounted in a wooden box to amplify the sound coming from the tuning fork. This box is called a resonator. The sounding mouth of a man is like a tuning fork. When the tongue is a vibrating body, the oral cavity and throat act as resonators.

4 "Sound receivers". Examples of the natural receptors of sound are the auditory organs of humans and animals. There is a special membrane inside the ear that vibrates when sound is received from it, and signals from it are transmitted to the brain. The sensitivity of the human ear varies. Young people and the elderly do not hear at the same time. Similarly, the frequency ranges in which animals hear sound is different. The dolphin receives ultrasounds up to 200,000 Gts. An artificial instrument that receives sound is a microphone. The word "microphone" is derived from two Greek words: micros - small and phone - sound. In the microphone, sound vibrations are converted into electrical vibrations, which are then amplified in special amplifiers. It is also possible to test students' knowledge by distributing handouts based on the mastered texts using Charkhpalak technology.

And also, when passing the topic "Swimming conditions of objects" using the method of "find a partner" (this experiment can be done in several ways), put the necessary tools on the table in a mixture, and each group is given a separate task for each method. selects and does the work independently. Some demonstration experiences do not have to be demonstrated by the teacher. He can give it to students as homework. For example, topics such as "Law of refraction of light", "Diffusion", "Dispersion of light" can be assigned in this way. Students are given the following task:

1. Go home, put a glass of water in it and put a pencil or your finger in it and observe. You repeat the experiment 3 times. What did you see? Write in your notebook.

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2. Paint a container of water and write down what you see in your notebook. Or spray some pungent liquid into the room and write in your notebook how you felt.
3. Go home and take a chicken patty and hold it in your eyes and look at the sun. What did you see? Write in your notebook. Another method. Having a silent experience on a topic that was sent or read to you the day before, "What was that? Explain this. Who was the first to make this discovery?" and develop students' independent thinking skills.

Conclusion

All in all, the purpose of the use of modern technology is to teach students to think logically in the classroom, to express themselves freely, to evaluate themselves, to work individually and in groups, the transition of the teacher to a real teaching activity, that is, not to teach the child, but to guide students in their work on learning, mastering knowledge, making them comfortable, easy, to achieve a continuous improvement of the quality of students' knowledge and the level of their pedagogical skills, as well as the rapid selection and effective application of methods, the correct selection and effective application of methods in practice1. Thus, the application and correct organization of pedagogical technologies at the lessons of generalization and consolidation in physics, knowledge of the basic laws of nature on a scientific basis, the development of students' mastery. It provides a broader level creative and logical thinking, the study of natural phenomena by comparison, teaches to systematize the acquired knowledge, and in the future serves to nurture creative and active youth.

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