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Scientific Basis Of Physical Quantities In The Teaching Of Physics

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Annotatsiya: O‘quvchilarni fizika faniga qiziqtirishni bir nechta usullari yoritilgan, “Elektr sig‘imi”, “Kondensatorlar”, “Yarim o‘tkazgichli asboblar”, “Elektromagnit tebranishlar va to‘lqinlar” mavzular o‘tilayotgan vaqtda uning amaliy ahamiyati, fizik kattaliklarning o‘lchamlari (uzunlik, vaqt, massa, bosim, temperatura va h.k) o‘rganilgan,
Kalit so‘zlar: temperatura, yorug’lik namlik (absolyut va nisbiy), havo bosimi, shovqin, elektr va magnitmaydoni, radiatsiya oqimi, radiaktivlik
Аннотация: Освещены несколько способов повышения интереса учащихся к физике, изучены практическое значение темы "Электрическая емкость," "Конденсаторы," "Полупроводниковые приборы," "Электромагнитные колебания и волны," размеры физических величин (длина, время, масса, давление, температура и т.д.).
Ключевые слова: температура, свет, влажность (абсолютная и относительная), давление воздуха, шум, электрическое и магнитное поля, поток радиации, радиоактивность.
Abstract: Several ways to increase students' interest in physics were highlighted, and the practical significance of the topics "Electric Capacitance," "Condensers," "Semiconductor Devices," "Electromagnetic Oscillations and Waves," and the dimensions of physical quantities (length, time, mass, pressure, temperature, etc.) were studied.
Keywords: temperature, light, humidity (absolute and relative), air pressure, noise, electric and magnetic fields, radiation flux, radioactivity.

Introduction

Ensuring that our growing sons and daughters enter life as a well-rounded generation is one of the greatest goals for society. Today's fast-paced era requires students to receive excellent education. After all, the future success of our youth is determined by their ability to independently acquire knowledge, self-development and self-improvement. This attitude towards children is fully reflected in the state policy on education and its principles being implemented.

Physics is taught in grades 6-9 for two hours a week. In grade 6, students are given general information about physical phenomena and quantities. This helps students become interested in physics, creates an initial idea of the science of physics, and forms their scientific worldview by explaining the essence of physical phenomena around them in an elementary way.

- etc, which were studied in the natural sciences taught in 4th grade and botany and geography taught in 5th grade ;
- the difference between light and darkness, knowledge of the sky, the sun, the moon, the

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stars, and their daily rising and setting;

- He should know what a mountain, valley, field, river, village, and city are, depending on the nature of the place he lives in.

Through these concepts, students should be able to see, hear, perceive, and observe objects and phenomena. Through these observations, they are prepared to master the knowledge of physics found in the content of the subjects of natural geography, biology, and chemistry.

Methodology

In the upper grades, students systematically study all sections of the physics course. In this, the content of physics education is taught in relation to physical phenomena and processes occurring in social life and the surrounding environment.

Vivid examples and real-life comparisons are important for physics to easily penetrate the hearts of students and become firmly embedded in their memory. This experience can be effectively used in every subject.

The fundamental importance of physics in unlocking the secrets of nature and the fact that its laws form the basis of modern technology, andKnowledge in the field of physics is of great importance for the future development of society. Physics has sufficient potential for formation as an educational subject. This is determined by the fact that this subject is the basis of all technical devices, the abundance of opportunities for applying the acquired knowledge in real life. At the same time, in the process of studying physics, the student goes through all stages of cognition (observation, hypothesis, experiment, observation and generalization of results).

Analysis Results

There are several ways to get students interested in physics. For example, physicselementaryon the chairstudentspeoplefairy talesandfrom proverbsuse gives good results.This is a fairy tale.and proverbslessonin the process, questions and answers,fun evenings, various physics competitions, quizzes, competitions of cheerleaders and wits, and extracurricular activities are useful. Such figurative analogies in fairy tales and proverbs play an important role in bringing physics closer to other subjects, unifying topics that are close to each other in physics. For example, in the 6th grade, in explaining quantities such as a material point, trajectory, path and displacement, time, speed, it is important to interest students through the fairy tale "The Little Fox", which has become interesting for them. The little fox, who is heading towards the forest, walks along the forest path along the trajectory and encounters various animals on his way. He sings and loses time.

Another such tale is the tale of Little Red Riding Hood. Little Red Riding Hood, on her way to her grandmother's house, moves through a forest path. The wolf, instead of walking along the path, movesthroughredfrom the hatbeforeto grandma'sarrivedtakes.Thisfairy talethroughYou can also use the above topics to get students interested in physics.

The events in the fairy tale "The Turnip" - one of the favorite fairy tales of students in their youth - can be used in the themes of force, gravity, friction, and gravity. When the grandfather cannot pull the turnip, he calls for help from the grandmother, granddaughter, dog, cat, and mouse: as a result of the combination of forces, the turnip licks its place.

It is known that the organism is immediately affected by changes in the physical characteristics of

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the environment, such as temperature, brightness, humidity (absolute and relative), air pressure, noise, electric and magnetic fields, radiation flux, radioactivity, and so on.

Students can also use biophysics materials when studying physics. Various forms of teaching can be used to teach students the elements of biophysics: lessons, excursions, practical work and laboratory exercises, independent research activities of students, preparation of abstracts, etc. However, when studying biophysics material, the use of a lesson often gives better results.

Observations have shown that the use of fragments in introducing students to the elements of biophysics is appropriate, since it requires very little study time and ensures the systematic implementation of the connection between physics and biology. The use of much more time for this is characteristic of various types of student activities outside the classroom and school, as well as faculty training.

The biophysical material selected for study should be didactically transformed in such a way as to make it optimal for studying specific topics of physics, since the methods and forms of revealing the content of the elements of biophysics to students do not require different methods of organizing students' educational activities and separate teaching methods. They do not differ much from the methods used to introduce students to the elements of technology. Of course, in this case, the specific content of the biophysical object should be taken into account, the method of in-depth presentation of the material should be correctly determined, and the properties and characteristics of the objects should be taken into account during a specific lesson.

In the topics of thermal phenomena, the most important place of heat in human life is shown. In this, taking into account the age of the students, cartoons seen on TV, legends about fire heard in ancient world history lessons are recalled, and the struggle of man for survival in nature is presented in an interesting way. Some of them are presented in the textbook. It is shown that the control of fire is the main driving force not only in ancient times, but also in the most powerful technology of our time. For example: Space launch rockets, intercontinental missiles, all ships, cars, tractors, trains, etc. Accordingly, the study of thermal phenomena, related that, the topic of heat generators and receivers is smoothly transitioned.goes.On Earthof heatmainThe source is the Sun.CarIt is explained that the basis of the gasoline burning in the engine is the Sun. At the same time, it is proven that heat can be generated not only by burning something, but also by doing work. This is demonstrated by the fact that a coin is heated when rubbed against a woolen material. This creates the basis for the concept of work being converted into energy, and energy into work.

The current development of science and technology requires the inextricable connection of knowledge, practice, and experience. If physics is taught separately from production, students will not understand why this science is needed and why it is necessary to study it. It is not only aimed at increasing students' interest in physics,maybe their technicalactivitydevelopment, scienceand also aims to strengthen their polytechnic training by showing the role and importance of technological achievements in modern production. In particular, when studying the topics "Electric Capacitance", "Capacitors", "Semiconductor Devices", "Electromagnetic Oscillations and Waves", attention to their practical significance will have a positive impact on the development of students' technical creative abilities.

When studying the issue of “The magnetic field of current”, students learn about the magnetic properties of body tissues, that tissues are diamagnetic to a certain extent, like water, and

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therefore are not magnetized at all under the influence of an external magnetic field. However, there are paramagnetic substances, molecules, and ions in the body (there are no ferromagnetic particles in the body). The magnetic field affects them and affects many processes of life, for example, the state of cells, tissue respiration, the human nervous system, and others. It should also be borne in mind that when the resistance of the conductor is small, the lower the resistance, the greater the current strength. Neglecting this can lead to serious consequences.

Another way to interest students in this subject in the process of teaching physics is to conduct physical experiments during the lesson. The students themselves observed physical processes in nature before they learned physics. However, as a result of these observations, not all students can draw the right conclusions about their essence. In addition, not all students have seen all the existing processes. Therefore, there is a need to demonstrate specially organized physical experiments in the classroom within the framework of school conditions. Properly organized, demonstrated and interpreted experiments in physics allow students not only to learn the structure and operation of equipment, but also to notice the laws in them. Physical demonstrations also increase students' interest in this subject. With the help of demonstrations, physical concepts, physical quantities and the possibilities of measuring them are shown. They are then formed, developed and deepened in laboratory work, solving problems. At the beginning of physics lessons, it is necessary to demonstrate such experiments, although they are simple, but they should be a starting point. The phenomena observed in them will later serve as a basis for explaining others. The dimensions of physical quantities (length, time, mass, pressure, temperature, etc.) are determined and the relationships between them.

Demonstration experiments are used to demonstrate the practical use of the laws of physics during teaching (heat engine, thermometer).

The following demonstrations are aimed at deepening knowledge. The experiments shown in them demonstrate a complex process using several physical laws. Of course, such experiments are not very numerous, and are conducted when students have accumulated a certain amount of knowledge. The number of demonstrations shown should not be large. It is better to give the experiment as an aid to the teacher's explanation. The devices used should be simple and varied, so that the student's attention is not exhausted. Most importantly, the demonstration should be short. You can also give interesting experiments to do at home.

1. Take a thin-walled glass and dip it in hot water. Then, with the open end, dip it into cold water. After a while, the cold water will rise inside the glass. Why?

2. Take two glasses. Cut a rubber ring the same diameter as their mouths. Place the rubber ring on the mouth of the first glass. Throw a small piece of paper into the glass and burn it. Immediately close the mouth of the second glass by placing it on the rubber ring. After 1-2 seconds, if you lift the top glass, the bottom one will also rise. Why?Make a box out of thick cardboard. Pour water into it and place it on a hot electric stove. The water will heat up andfinally boils. The box is fullremains. Explain why.

The methodology of conducting excursions in physics is reflected in a number of studies, but the objects of observation in them are mainly agricultural and industrial enterprises. Excursions organized to improve the quality of students' knowledge in physics and direct them to their profession give good results.

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For example, museums with exhibitions on astronautics, observations in polyclinics on medical technology. The goal is to show students the biological effects of electric current on the body and its use in medical devices for diagnosing and treating patients. The excursion is held in the physiotherapy room of the polyclinic.

Conducting excursions in the form of thematic, intellectual and scientific travelpossible. For this, a postcard with pictures of old Samarkand buildings and an observatory is used. If the epidiascope works in the physics room, they can be enlarged and displayed on the screen.

The presentation begins with historical monuments built during the Timur era and ends with a picture of the observatory. It is said that Ulugbek himself was at the forefront of the project to build the observatory, that the great mathematician of that time, Ghiyosiddin Jamshid, made corrections to the projects, and made a great contribution to the preparation and construction of astronomical instruments. As a continuation of this research, it gives an idea of the creation of telescopes and the modern radio telescopes, X-ray telescopes and telescopes launched into space.

Various physics-related riddles can also be used to interest students in physics. Riddles are a test of intelligence and sharpness of thought. Because they teach students to be responsive. They prevent mental fatigue during the lesson. And the teacher helps students to explore the world of their minds and identify their individual characteristics.

Invisible, Untouchable, Without Younoin place,
Lifealsoimpossible.(Air) Every home needs it, Its warmth is a comfort to the soul.
Television, refrigerator,
SHE ISthere isiflivelyalive.(Electricuntil) Light spreads everywhere,
Unnecessaryto him/hermatch.
SHE ISwithit is clearcountry.(Light bulb) A hundred numbers in a thousand lights,
Measuresurfaceandside.(Centimeter)

Physics clubs are the most convenient way to deepen students' theoretical and practical knowledge, in which they voluntarily attract those interested in physics and its practical applications. The success of the clubs depends on the fact that, when properly organized, the goal of the club is to increase students' independence, initiative, and activity in conducting physical experiments. Club activitiesinterestingasorganizationto growfor the purposesomein casesstudentsOn days when classes are less busy, it is advisable to change their delivery methods and techniques very quickly.

The educational environment of the school includes the equipment of the physics room, the presence of computer classes. The presence of a production enterprise in the area, museums and the possibility of organizing scientific trips to them are considered extracurricular educational environments. One of the methods of studying the educational needs of students is observation. Observation should be carried out both in class and outside of class. This includes taking into account what books they read the most, what clubs they participate in, how they behave when they go on trips, visit museums, and attend exhibitions.

interdisciplinary studies are used to interest students in physics at school.of connectionsimportancebig.Thisattitudewithat school,The introduction of biophysics elements first of all creates a basis for students to study the subject of physics in depth and extensively, revitalizes interdisciplinary connections, increases students' interest in the profession and creates opportunities for conscious choice, and further strengthens polytechnic education. Physics

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teachers should be able to pass physics-related materials in a way that connects them with other subjects.First, they need to be well acquainted with the programs of subjects taught in high school and know the content, goals and objectives of the proposed materials. Also, the physics teacher should know when and how the knowledge and skills acquired by students from the physics subject materials will help other subject teachers in passing which topic, as well as where and in what quantity the physics materials are used in practice. Otherwise, the physics teacher will not be able to closely assist other subject teachers and will not be able to explain his subject in connection with other subject materials, especially with practice. Connecting the elements of biophysics in the physics course and with other subject materials in the teaching and upbringing process, increasing their effectiveness, creates a great opportunity for students to gain comprehensive and solid knowledge in all aspects.

Conclusions And Recommendations

In recent years, a lot of new information about renewable energy sources (wind, solar, geothermal, biomass) has been published in the media and at scientific and practical conferences. Therefore, it is important to apply this information to the educational process, in particular, physics lessons, to convey to students the latest modern physical and technological foundations of energy and power engineering, and to develop sufficient knowledge, skills and qualifications in this field.

In an era where the focus is on science and teachers, we need teachers to provide students with a new perspective, approach, and technology for the new era.to the mind, to the heartenterdemand to gowill be donewith this lofty goalWe need to take a step.

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