

INTERDISCIPLINARY RELATIONSHIPS AND ITS APPLICATION IN TEACHING THE TOPICS OF ELECTRICITY IN A SCHOOL PHYSICS COURSE

¹Umarov Abdusattor Artikovich, ²Zakhidov Ibrahimjon Obidjonovich, ³Boyturayeva
Gulbakhor Kamoliddin kizi

¹Senior teacher of Fergana Polytechnic Institute

²Associate Professor, Candidate of Pedagogical Sciences Namangan State University

³Doctoral student of Namangan State University

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Abstract. *The article discusses the importance of interdisciplinary teaching of subjects, its goals and tasks, and the importance of teaching the subjects of the school physics course on the laws of electricity. Making interdisciplinary connections in the physics course of the 7th grade of general secondary schools shows the topics related to electricity, making interdisciplinary connections based on materials related to biology and medicine.*

Keywords: *interdisciplinary teaching, physics course, electricity, physics tasks, physicists, teaching process, biology and medicine, laws of electricity, skill formation.*

Introduction. It is known that in many developed countries, a lot of pedagogical research work is being carried out considering the interdisciplinary teaching of subjects, the effective use of modern educational methods of related subjects (topics related to science) as one of the main issues.

They also increase the effectiveness of education by using it in the educational process and achieving positive results. In particular, in the interdisciplinary teaching of the physics course, special attention is paid to improving the technologies of interdisciplinary education through the development of students' worldview, ways of imparting related knowledge based on the objectives of the science, and the formation and development of its didactic support.

We all know how important the knowledge that students have learned at school and their ability to apply it in practice are. From this point of view, physics, like all other subjects, and the materials used in its teaching require the development of methods and methods of making connections based on the purpose of teaching.

In interdisciplinary teaching, no changes are made to the hours of the curriculum, but attention is paid to the use of innovative technologies in the lesson, instilling knowledge "relevant" to one or another subject in terms of the purpose of the subject, as well as in extracurricular activities, organizing independent education and assigning homework.

Interrelated teaching of various subjects leads to repetition, deepening of students' knowledge and saving time to a certain extent. To provide students with in-depth knowledge of natural phenomena based on solving the problems of interrelationship of natural sciences taught in general secondary education - mathematics, physics, chemistry, etc. formation of skills is the main issue of modern dialectics.

The development of the science of physics ensures the study of the true nature of natural phenomena, the teaching of the subject of physics in a natural way, connected to other sciences.

But in the educational process, interdisciplinarity is not created by itself. This issue is multifaceted, and it can be implemented only in directions aimed at a certain goal [1].

Adapting the effectiveness of education to the goals and tasks of the content of the educational system is based on its scientific aspect, at the same time, it is based on the selection of methods and tasks suitable for students.

Methods. In teaching the subjects of the school physics course textbook on the laws of electricity, taking into account the development of the means of production today, in teaching the school physics course, the following tasks are assigned to the physics teacher in teaching the knowledge about the proper management of the means of production and the effective use of spent electricity:

after students have completed the electrical section of the school physics course, they will have the knowledge and skills to correctly construct electric circuits based on the theoretical knowledge of the laws of electric current;

to the knowledge that students can make accurate calculations of laboratory work by applying the laws of constant current to electric circuits;

Students should be able to solve problems related to constant and alternating current laws and have the skills and abilities to apply them in practice.

It is necessary to prepare the section of the laws of electric current of the school physics coursebook to the extent that students of schools, vocational and technical schools can form and develop their knowledge of physics and apply their innovative ideas in practice through interdisciplinary teaching. This goal can be achieved by: "Electric charge" of the school physics course.

By answering the question "what is electricity" when teaching materials on the subject of "electric field", instead of being afraid of electricity, students develop a correct attitude, by explaining the negative and positive effects of electricity. It is necessary to arouse students' interest in new and improved production technologies, and then, in order to maintain these technologies well, physicists should create lightning reflectors, as well as install and use them effectively, from lightning reflectors to residential and production technologies, self-propelled vehicles it is necessary to form knowledge about the installation rules and direct them to the creation of new types of lightning arresters.

In the interdisciplinary interactive teaching of the topic "Electrical resistance" of the physics course, the calculation of the resistance of the conductor when pulling the electrical network of production technologies depends on the relative resistance of conductors of the same size depending on the type of electrically conductive substance by explaining that it forms, develops and strengthens the innovative idea of calculation using specific programs in students to calculate the energy consumption of production technology [2-3].

Results. In order for the teacher to be able to organize the educational process in order to provide quality knowledge to the students from the physics course, it is better than the methodology of teaching physics if he knows well the theory of the physics course and is able to apply it in practice.

The teacher must guide students to the process of teaching and the psychological laws of acquiring physical knowledge, the formation and development of skills and abilities, and the creation of innovative ideas by teaching them to think independently.

Also, the science teacher should always take into account the individual differences in the age characteristics and psychological development of the students, and the student's interest in the field.

Clarifying students' interests in the physics course by taking tests from schoolchildren and holding questions and answers based on the innovations created by physicists, as well as conducting interviews, teaching them by connecting the physics course to interdisciplinary, new improved production technologies, and It is necessary to form and develop ideas for creating new technologies in the minds of students.

The development of the science of physics ensures the study of the true nature of natural phenomena, the teaching of the subject of physics in a natural direction, connected to other sciences. But in the educational process, interdisciplinarity is not created by itself. This issue is multifaceted, and it can be implemented only in directions aimed at a certain goal.

Since all the new and improved technologies these days are powered by electricity, we believe that it is necessary to teach the students the laws of electricity in order to understand how they operate and how they work. when increasing, it is necessary to take into account the materials related to medicine (see table 1):

Correlation of the laws of electricity with medicine in a school physics course

№	Subjects of physics	Medical supplies
1.	Electric current. Current sources. Electric voltage and its measurement (grade 7)	In the event of clinical death, exposure to the human body with a defibrillator (giving a large amount of electrical impulses) for the purpose of resuscitation.
2.	Electric current in gases (Grade 8)	Removal of harmful viruses using a device that produces ozon gas under the influence of an electric discharge.
3.	Dependence of the resistance of metal conductors on temperature (class 10)	Treatment of a person's blood circulation with the help of weak electricity with an electric belt, placing an electric mat under the feet, etc.
4.	Transistor electromagnetic oscillation generator (class 11)	Examination of the human body by means of high-frequency electromagnetic vibrations. Determination of heart rate and pulse by electrocardiogram.

Discussion. Special attention is paid to the use of innovative methods in the interdisciplinary teaching of the physics course and the improvement of interdisciplinary teaching technologies by applying them to the process of physics education, ways of developing the worldview of students' knowledge of physics and the formation and development of its didactic support.

The interdisciplinary interactive teaching of the laws of electricity of the physics course serves to develop the skills and abilities of students to solve the problems of modern science and technology development and implement energy saving, create competitive technologies.

In order to achieve effective results in interdisciplinary teaching of school physics topics related to electricity, it is possible to approach based on our following suggestions and recommendations:

creation and development of innovative ideas of involving students in project and educational research activities;

widely introducing effective forms, methods and means of educating students on the basis of national, universal and spiritual values into the educational process;

organization of work on the interaction of physics with general education subjects and guidance of students to the profession;

introduction of modern methods and directions of physical science education outside the classroom and school in the education of students;

to be able to apply the theoretical knowledge of physics in practice, to be able to use it in solving the problems encountered in everyday life processes;

introducing digital technologies and modern methods into the educational process;

implementation of information and communication technology tools and programs and modern methods of teaching in the process of physics education in order to ensure the effectiveness and efficiency of the educational process;

introduction of assessment criteria based on competencies provided for in state education standards.

Based on the practical results of methodological innovations [8-14] created for the purpose of interdisciplinary teaching of the subjects of the school physics course on the laws of electricity, the following conclusions were reached:

teaching the laws of electricity in the school physics course in the continuous education system, scientific analysis with the participation of students and teachers of the general secondary school showed that the school students have the ability to manage and develop new improved technologies in electricity requires a broader interdisciplinary study of the laws of the tuki;

teaching the laws of electricity in the physics course and applying it in practice guides students to create new improved technologies and serves to develop creative engineers who contribute to the development of their production;

a student who has studied the laws of electric current in an interdisciplinary relationship develops the competencies of effective use and management of modern production technologies and develops creative abilities;

Pedagogical-psychological, scientific-physical and methodical analysis of teaching the laws of electric current in the school physics course justified the necessity of interdisciplinary training from simple to complex, taking into account the individual characteristics of students;

students were trained to choose measuring instruments taking into account the parameters of the electric circuit and to correctly connect them to the electric circuit, to apply the theoretical results in practice.

In general, interdisciplinary connections develop the thinking of students in learning physical concepts, help to form their abilities such as comparing the knowledge they have received

from the sciences, analyzing various facts, making conclusions and conclusions, and helping to have a creative approach to solving problems in their independent activities.

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