

THE RELATIONSHIP OF TECHNICAL SCIENCES WITH PHYSICS IN PREPARING STUDENTS FOR TECHNICAL CREATIVE ACTIVITY

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Abstract

In this article, there are opinions about the relationship between physics and technical sciences and their training in preparing students for technical creativity.

Keywords: Robust, search, creativity, scientific and technical, measurement, management, hardware synchronization.

Introduction

If the student clearly understands why one or another law in general education subjects such as physics and chemistry should be studied, then he will understand the importance of this law for himself and for his future professional activities and will quickly master the necessary educational materials. as a result, he formulates a working hypothesis to find a solution to the problem. In other words, creativity here is a unique way of thinking in a problem situation. When the problem is posed, questions arise: what to do and what to look for (find) and what is needed for this. So, the issue of creativity can be called a model of a problematic situation. But it should not be forgotten that the motive of activity is important in solving any creative problem. So, the motives of activity play an important role in solving the issues of creativity. Pupils' motives for activity develop in studying the scientific and technical foundations of modern production, equipment and technology, in the process of solving technological and technical issues, as well as in performing various individual training sessions in practical training. In order to develop creative thinking in students, it is aimed to teach using different methodological methods (for example, oriented bases of production activity, problem situation, selection of problem production situation, professional direction of learning general education subjects, etc.) should be organized in a directed manner. From our point of view, this issue can be successfully solved by ensuring professional orientation of technical sciences. Based on this requirement, the teacher reveals the specific goals of learning a new law or phenomenon in the lesson. It shows where, in what profession, how, and for what purpose appropriate scientific knowledge is used, their importance and necessity for managing a specific production process. The teacher chooses a problematic production situation and shows how it can be researched using scientific knowledge. For example, when the question "Is it possible to sew without a needle?" is asked to the students of KHK, who have chosen the tailoring profession, they will



definitely answer no. Then the teacher should explain to the students that there are ultra-wave machines that can sew without a needle. After that, the study of electromagnetic wave scales and wave properties begins.

During the research, according to our observations in the KHKs that train junior specialists in the specialty of "Power Transmission Machines, Electric Machines and Equipment", there are two forms of interrelated teaching of physics and technical sciences.

In the first case, the teacher moves from teaching physical laws, phenomena and regularities to their practical application in technical disciplines such as "Electric machines", "Electric measuring instruments", "Fundamentals of electrical management", "Installation and adjustment of electrical equipment".

In the second case, the student applies the laws known to him from the physics course in the process of studying the educational material of the mentioned technical sciences.

On the basis of the observations, it was found that the connection of technical educational materials with the educational material of general professional subjects in special subjects can be carried out in the following ways.

1. Explanation on the basis of materials based on the laws learned by students in the study of physics and electrical engineering.
2. To explain to students the principles of operation of this or that electrical equipment or apparatus based on known physical laws.
3. To put in front of students problems that must be solved using physical laws.

The connection between physics and technical sciences should be realized based on the fact that the laws of physics serve as the scientific basis of many technical phenomena. For this purpose, training organized in special subjects should be aimed at deepening and expanding the knowledge gained from physics. The possibility of interdisciplinary communication in strengthening the educational material and checking the knowledge of students should not be overlooked. In addition to explaining the teaching materials on one or another topic in the physics program, it is appropriate for a physics teacher to ask students questions about the use of the physical phenomenon or law under consideration: For example, read the topic "Magnetic field of current" in learning, the teacher can ask the students the following question: "Why should the distance between the conductors of the air conductor be not less than the set amount"? etc.

Teachers of special subjects, on the other hand, should ask appropriate questions to determine the extent to which students understand the physical basis of electrical equipment and devices in order to verify and strengthen the knowledge learned in special technology classes. is considered For example, "Why does a synchronous electric motor have a small starting torque". "On what physical phenomenon is the change of direction of motion and dynamic stopping of an electric motor based"?

Here is the answer to the question of what is the main thing in the implementation of the connection between physics and technical sciences and how to achieve an organic connection between these sciences, the connection of teaching materials of physics and special sciences, to help students better understand the teaching materials, it allows to apply it in practice and form activity and independence in them in the process of study. Ensuring a high level of activity



in students (in particular, in the process of applying, mastering and technical thinking of technical knowledge) can be achieved by applying the principle of problem-solving to education.

Each level of student activity is manifested in the process of performing actions corresponding to a specific goal at a certain stage of the educational process. In addition, when setting the activity level formation sequence, it is possible to first establish a lower activity level and then provide a higher activity level. Because the transition from one level of activity to another is based on the result obtained at the lower level. So, in order to form creative activity in students, each of them needs to master all levels of activity.

Stages of creation of creative motivation and stimulation of students' need to study, through mass methods, tools and methods of creativity (brainstorming, inversion, method of focal objects, empathy, morphological analysis, systematic operator, heuristic methods, algorithms for solving inventive problems) and others it is necessary to involve them in active creative activities. They allow the teacher to carry out a collective discussion and free exchange of ideas on the problematic assignment questions put before the students.

As can be seen from the above, engaging students in creative activities related to physics allows solving a number of important pedagogical issues. These issues can be functionally divided into three groups: a) educational; b) educational; c) practical.

The main essence of solving the problems belonging to the first group is to explain the main directions of scientific and technical development and the role of technology in the industrial and agricultural sectors leading in one or another district and in human life in general in a form that is easy for students to understand. It reveals the importance of science, its laws and regulations, the basis of modern technology and the basis of predicting future technology through concrete examples. Because in KHK, students get acquainted with the fundamentals of public professions, the culture of labor organization, innovative work methods, ways to increase labor productivity and production efficiency.

The second group includes issues that educate students to respect the work of adults, to strive to become industrial innovators, to make their own worthy contribution to the work of general creativity. Because the students' participation in technical creativity serves as a basis for their pride in the great contributions made by the scientists and inventors of our country to the world science, technology and culture. Creative and technical independent activity in students educates them to be conscious and responsible towards work, as a result, it serves as an effective means of improving and developing personal qualities.

The issues of the third group are inextricably linked with the preparation of students of vocational schools for professional activities. Because technical creativity is a skill for students to master technical language (sketching and drawing), to use various equipment, devices, and control measuring instruments that serve as a basis for creating models, equipment, devices, and machine models. and creates conditions for the formation of skills. In addition, it allows students to see and solve technical issues around them, to look for the best solution to the problem based on the knowledge gained in the training.



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