



## IMPORTANCE OF PHYSICAL PROBLEMS IN ENGINEERING STUDENTS

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**Annotation.** *In this article, it was highlighted as a problem based on the demand of the time that it is important to solve problems by taking into account the importance of research in the development of students' engineering ability. In the article, it is justified that it is necessary to solve problems in order to acquire knowledge and conduct research by organizing independent educational activities of students. The implementation of research tasks and problems, research tasks is based on the facts collected by students (experience, observation, work on literature) and their theoretical analysis.*

**Keywords.** *Students, engineering, innovation, ability, research, research, development, experience, observation, systematization, generalization*

### INTRODUCTION

Special attention should be paid to the selection of interesting issues in order to develop students' thinking skills and increase their interest in the lesson. The selected issues should form a clear system and be directed to a specific goal. Therefore, it is necessary to pay special attention to the selection of issues related to certain topics and chapters aimed at forming independent thinking skills.

The main role in the process of setting the problem is given to the teacher. In the next process, students sometimes get lost and sometimes get on the right path and offer their own ideas. The audience draws and discusses pictures and diagrams on the blackboard or flipchart paper. They select the most acceptable one from among them. The teacher acts as a guide in this process. Students do not remember the technical objects presented in the textbook, so they do not realize that physical knowledge serves as a basis for solving many household problems, not only professional. If the typical problems covering professional and household issues are separated and the methods of solving them are explained to the students, it will be possible to effectively implement the principle of practical training. For this, it is necessary to do the following:

1. Determining what kind of issues a person may encounter during his life can be solved with the help of the knowledge obtained from physics.
2. Selection of problems to teach how to solve typical problems during studying physics course in TOTMs.
3. Learning the method of solving each typical problem.

*Issue 1. Development of technology for solving concrete problems.*

1. We determine the purpose of the activity: Development of technology for solving a specific problem.

2. We determine that the formed goal includes the above-mentioned elements: the specified activity - development; the resulting product is indicated - technology (method), that is, the system of performed works; It is not clear why the goal should be developed



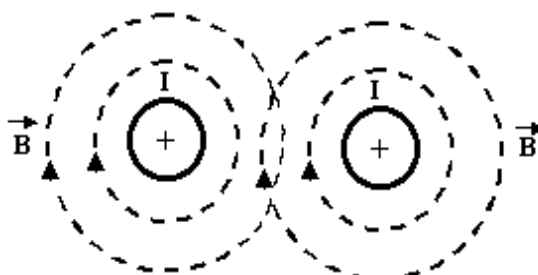
according to the property of the resulting product, that is, it is not clear why the action system should be developed. should have scientific knowledge and practical skills. When solving experimental problems, experiments should be performed in accordance with all the conditions of a school demonstration experiment. Special attention should be paid to the good visibility of tools and events. It is necessary to lead the process of the experiment by the teacher himself. We give examples of demonstrative experimental problems. It is necessary to lead the process of the experiment by the teacher himself. We give examples of demonstrative experimental problems. [2,4]

A constant current flows in the same direction along two parallel wires located at a distance of 30 cm from each other. The distance between the supports where the wire is fixed (the length of the wires) is 50 m. The current in the wires is 150 A. Determine the modulus and direction of the interaction force of the wires.

*Given:*  $i_1=i_2=i = 150$  A-current strength in each wire;  $=0.3$  m-distance between wires;  $=50$  m-distance between bases; from the table:  $H/m$ -magnetic constant;  $= 1$ -magnetic absorption of air. It is necessary to find: interaction force (module and direction) of  $F$ -wires.

*Solving.* We consider the distance between the supports as the length of the active part of the wire. », the wire can be considered infinitely long, then we can find the interaction force from the following formula:

$$F = \mu_0 \mu \frac{I^2 l}{2\pi a}; F = \frac{4\pi \cdot 10^{-7} H / m \cdot 1(150A)^2 50m}{2\pi \cdot 0,3m} = 0,75 \text{ H.}$$



We use Figure 1 to determine the direction of the force acting on the wires. Between the wires (on the inner side) the magnetic field weakens (induction lines are directed towards each other), on the outside, the field induction lines of both wires have the same direction - here the field is stronger, so in the same direction, the wires must fight with each other. [1,2]

The mutual attraction of the wires is equal to 0.75 N. As a result of the students independently conducting experiments and observations in solving experimental problems, the skills and competencies of independent work are formed and developed in students.

**CONCLUSION.** Problems whose object of study consists of graphs of connection of physical quantities are called graphical problems.

In some cases these graphs are given in the condition of the problem, and in some cases they need to be summed.

*When solving graphical problems:* students should be taught the skills and abilities to "Read" graphs and make simple graphs. It is necessary to make working with graphs more



and more complicated, recommending students to find quantitative connections between quantities, until it is necessary to make equations. .[3]

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