USE OF INTERACTIVE METHODS IN PROBLEM SOLVING LESSONS

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ABSTRACT

In this article, students expand and deepen their knowledge of physics by solving problems, learn more about laws and formulas, consider (understand) the limits of their application, improve their ability to apply general laws to specific situations (situations). educational technologies. Here are some suggestions on how to look or get an appointment for hair extensions.

Keywords: Problem, problem solving plan, deductive method, logical parts of the problem, innovation, educational technology, independent work, interactive method.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

By solving problems, students expand and deepen their knowledge, learn more about laws and formulas, consider (understand) the limits of their application, and develop the ability to apply general laws to specific situations.

But if he does not understand the essence of the problem, if he realizes that a lot of work is needed to solve it, his desire to work independently may decrease. Therefore, it is necessary to gradually move from the problems to the problems that serve to gain knowledge, so that most students will be able to solve them.

Quality issues are addressed through logical discussion. In solving computational problems, equations are created and they are solved mathematically. Some problems can be solved by drawing geometric shapes.

The problem can be solved according to the following plan (some points may be omitted in solving some problems):

1. The condition of the case is read carefully;
2. Do you understand the meaning of all the words in the question? The meaning of an unknown word is determined by a book or a teacher;
3. Write the condition of the problem (it is determined that all are in the system of units of measurement);
4. Draw a diagram (if necessary);
5. Analyze the problem and reveal its physical meaning;
6. It is determined what laws will be used to solve this problem.
7. An equation is constructed that connects physical quantities;
8. Solve the equation, find the unknown quantity and get the answer in general;
9. Find the numerical value by calculating the values of the quantities in the SI system, substituting and calculating;
10. The obtained answer is analyzed, how the unknown changes with the change of the given data is considered [7].

If the problem is always solved according to this plan, students will get used to it. If there is a step left, the issue may not go right. The teacher has to show it.

Problem solving classes in physics sometimes require the identification of several quantities. If the problem is logically divided into several parts and analyzed in a separate case, the problem is covered in a coherent manner. Let's look at an example of solving the following problems.

Issue 1. The bike got off the ground, first made a flat acceleration and reached a speed of 18 km / h in 10 seconds. He then applied the brakes, slowed down, and stopped for 5 seconds. Find the accelerations of a bicycle in smooth accelerating motion and in flat decelerating motion. [9]

The issue can be logically divided into the following two parts:

a) The bicycle moved out of place, first made a flat acceleration and reached a speed of 18 km / h in 10 seconds. Find the acceleration of the bicycle in a smooth accelerating motion.

b) The bike started to move and reached a speed of 18 km / h. Then apply the brakes and stop for 5 seconds. Find the acceleration of the bicycle in a smooth decelerating motion.

given	Formula and solution
a) given $\vec{\vartheta}_0 = 0$ $\vec{\vartheta} = 18\frac{km}{soat} = 5\frac{m}{s}$ $t = 10s$ $\vec{a} = ?$ b) Berilgan $\vec{\vartheta} = 0$ $\vec{\vartheta}_0 = 18\frac{km}{soat} = 5\frac{m}{s}$ $t = 5s$ $\vec{a} = ?$	$\vec{a} = \frac{\vartheta - \vartheta_0}{t}$ $\vartheta_0 = 0$ $\vec{a} = \frac{\vartheta}{t}$ $\vec{a} = \frac{\vartheta}{t} = \frac{5\frac{m}{s}}{10s} = 0,5\frac{m}{s^2}$ Javob: $\vec{a} = 0,5\frac{m}{s^2}$ **Formula and solution** $\vec{a} = \frac{\vartheta - \vartheta_0}{t}$ $\vartheta = 0$ $\vec{a} = -\frac{\vartheta_0}{t}$ $\vec{a} = -\frac{\vartheta_0}{t} = -\frac{5\frac{m}{s}}{5s} = -1\frac{m}{s^2}$ Answer: $\vec{a} = -1\frac{m}{s^2}$

Issue 2. A car with m_1 mass and ϑ_1 speed chased a car with m_2 mass and ϑ_2 speed in its direction and connected to it. They then inelastically collided with a stationary wagon with a m_3 mass in its direction of motion. Determine the speed of the wagons.

given	Formula and solution
m_1 ϑ_1 m_2 ϑ_2 m_3 ϑ_3 $\vartheta'' = ?$	First we write the law of conservation of momentum for the collision of cars m_1 and m_2 (cases a and b). From $m_1\vartheta_1 + m_2\vartheta_2 = (m_1 + m_2)\vartheta'$ we find ϑ' $\vartheta' = \frac{m_1\vartheta_1 + m_2\vartheta_2}{m_1 + m_2}$

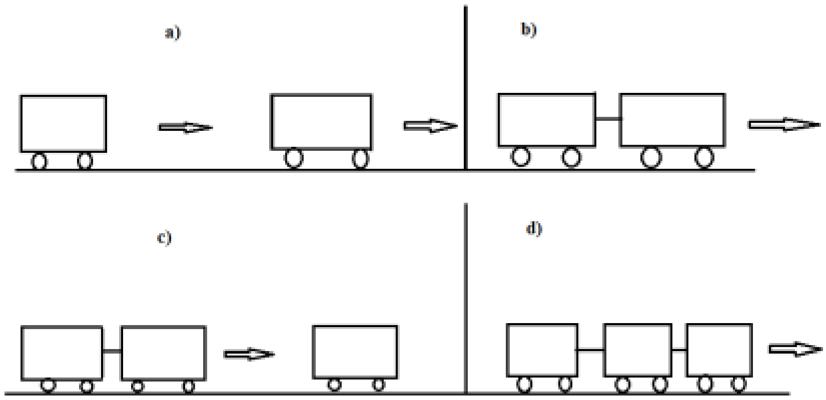

Figure 1.

In the second case, we write the law of conservation of momentum for the inelastic collision of cars 1 and 2 with car 3 (cases c and d).

$$(m_1+m_2)\vartheta^{'}+m_3\vartheta_3=(m_1+m_2+m_3)\vartheta^{''}; \qquad \vartheta^{''}=\frac{(m_1+m_2)\vartheta^{'}+m_3\vartheta_3}{m_1+m_2+m_3}=\frac{(m_1+m_2)\vartheta^{'}}{m_1+m_2+m_3}$$

Thus, using the deductive method, in solving this type of problem, the student performs the problem with understanding in the appropriate sequence. The teacher is asked to break the problem down into logical parts.

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