USING INTERACTIVE METHODS IN TEACHING THE TOPIC "ELASTIC FORCES. HOOKE'S LAW"

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Abstract: This article examines the application of interactive teaching methods in presenting the physics topic “Elastic Forces and Hooke’s Law.” Special attention is given to the effectiveness of modern pedagogical approaches in improving students’ understanding and engagement during the learning process. The study highlights the use of the “INSERT” method as an innovative instructional strategy that encourages active participation, critical thinking, and independent analysis among learners. Through this method, complex physical concepts related to elasticity and Hooke’s Law can be explained in a broader and more comprehensive manner. The article also emphasizes the importance of interactive technologies in increasing the quality and effectiveness of physics education.

Keywords: physics, Hooke's Law, elasticity, technology in teaching.

If modern advances in science, technology, manufacturing, and technology are widely used in education, these advances will shape the image of modern society in the country. This requires the presence of personnel who are knowledgeable in their field, possess a high level of professional skills, and possess extensive experience and expertise.

One of the most pressing issues today is the study of theoretical and practical aspects of using modern pedagogical technologies and improving the teaching of natural sciences. Physics is classified as an exact science, and we see that the use of pedagogical technologies in explaining topics to students is very effective. [1]

When a solid body is subjected to a force, the shape or size of the body changes, or the solid body deforms, as stated in physics. When we studied solid mechanics, we ignored deformations of the body, assuming that these deformations were much smaller and that they did not affect the body's motion.

However, in many other areas of mechanics, it is necessary to know and consider the laws of the relationship between the effects of forces on a body and the deformations caused by these forces.

Regardless of whether a body is at rest or moving unevenly, it deforms whenever a force is applied to it. For example, two forces of equal and opposite directions are applied to the ends of a ruler, expanding it. When these forces increase, the liner elongates, the distance between the individual particles of the liner increases, and the

liner deforms. When the forces applied to the ends of the ruler increase, the distances between all particles increase.

Now suppose that a force acts on one end of the same line. The liner accelerates under the action of the force, for the same reason that deformations occur in the liner under the action of a force. However, the nature of the deformations differs from the previous case. In the previous case, all parts of the uniform ruler were identical, and in this case, different parts of the uniform ruler deformed differently: when a force was applied, the parts located near it stretched more than the parts further away. [2]

Generally, a change in the shape, size, or dimension of a solid body under the influence of an external force is called deformation. If the body is able to regain its previous shape and size after the force causing the deformation is lost, such deformation is called elastic deformation; if it cannot fully recover, it is called inelastic deformation. [3]

"Elastic Forces. Using Interactive Methods in Teaching the Topic "Hooke's Law"

Here are some examples of using interactive methods in teaching "Elastic Forces. Hooke's Law": "INSERT," "Brainstorming," "Concept Analysis," and "FSMU."

Using the “Insert” method

The "Insert" method is used to assess students' knowledge of specific concepts related to a new topic and to develop their analytical skills in approaching text.

In the previous lesson, students will be given homework to study the new topic and write in their notebooks.

1. Small groups can be formed and named as follows:

Group 1: Team "Isaac Newton"

Group 2: Team "Galeleo Galeley"

Group 3: Team "Mirzo Ulugh Beg"

2. Two people from each group, "Elastic Forces. Hooke's Law," are asked to comment on the topic.

3. The groups take turns explaining their ideas.

4. The teacher writes the ideas on the board.

Then the teacher gives a lecture on "Elastic Forces." Hooke's Law divides the text into groups, emphasizing the essence of the text.

Groups read the text and determine the degree to which the text and the ideas they express correspond to each other (similarities and differences are represented by special symbols. A "-" sign is used if the comparison raises a question, and a "?" sign is used.)

7. Group members express their personal views, and the number of special

symbols is summarized.

8. Leaders are appointed from among the group members.

9. Leaders record the results in the table below and present the group's results to the class.

Special characters serial numbers	Names of groups		
	Isaac Newton	G. Galilei	Mirzo Ulugbek
“+”			
“-”			
“?”			

10. The groups' approaches are summarized and a final conclusion is drawn [4]

In this article, "Elastic Forces. A method for teaching the topic of Hooke's Law" is developed using interactive methods. The use of such technologies enhances learning effectiveness and helps students develop personal qualities, independent thinking skills, and a high level of physics proficiency, while also promoting interaction between students and teachers. This also increases students' responsibility to work more independently, as the teacher plays a significant role in interactive methods. Students are constantly monitored and guided, independent thinking and concentration are taught, curiosity is fostered, and problem solving is encouraged through questioning. This encourages students to find solutions.

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