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# DEVELOPING STUDENTS' INTEREST IN PHYSICS LESSONS AND ENHANCING CREATIVE THINKING

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**Abstract:**The article explores various aspects of forming competencies in physics lessons within a creative teaching process.

**Keywords:** development of competencies, quality of education, competence, competency-based approach, creativity, education, learning process, students.

In today's world, the rapid advancement of new technologies has led to a significant increase in the need for individuals who can independently solve emerging societal problems and enrich all spheres of social life with new content. As humanity enters an era of science-driven technologies, there is a growing awareness that it is impossible for a country to claim a worthy place in the global community without preserving its intellectual potential and developing creative thinking. Accordingly, educational systems around the world have recognized the need to prepare individuals who are not only able to live in modern society but can actively influence its development.

In this context, the adoption of the Decree of the President of the Republic of Uzbekistan Sh.M. Mirziyoyev "On Measures to Improve the Quality of Education and Develop Scientific Research in the Field of Physics" has brought the process of teaching physics to a new qualitative level. The decree outlines several unresolved issues and highlights the need to implement measures to improve the quality of physics education and the effectiveness of scientific research [1].

It is impossible to imagine teaching physics without practical experiments and demonstrations, which should be integral to both in-class and extracurricular activities. However, not all experiments can be conducted in a classroom setting. Nowadays, such challenges can be overcome through various technical and information-communication educational tools.

In the process of developing school students' interest in physics and enhancing creative thinking, it is crucial to address issues related to using diverse educational tools to increase the effectiveness of education—for example, hands-on experiments, technical teaching aids (TTA), ICT, and project-based learning.

To make physics lessons more engaging and to spark students' interest, teachers should coordinate their efforts using a variety of pedagogical methods. These methods should not only captivate students but also help develop their creative thinking. Without cultivating a sense of duty and responsibility towards learning, it is impossible to foster genuine interest in acquiring knowledge and deeply understanding the subject matter.

We highlight three main principles for increasing student interest in physics lessons:

1.Stimulating interest in the subject should not be an end in itself but a means to achieve broader educational goals.

2.By developing interest and creative thinking, the teacher helps students internalize knowledge creatively, resulting in deeper, independent engagement with the subject.

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3.The core task of teaching is to guide each student towards regular intellectual effort, self-education, and using their free time creatively [2].

A subject teacher should constantly and purposefully work to engage students with the subject at all stages of the lesson, including during independent work. Psychological, pedagogical, and methodological literature present various definitions of "independent work," and most scholars agree on the teacher's active role in organizing and supporting it.

Prominent pedagogical researchers such as N.G. Dairi, M.A. Danilov, B.P. Esipov, I.T. Ogorodnikov, M.N. Skatkin, S.V. Ivanov, and I.Ya. Lerner have made significant contributions to understanding how to organize independent work in a way that fosters students' interest in the subject and promotes creative thinking [3].

The key stages of organizing such work include:

**Preparation.** At this stage, the teacher explains the purpose of the work, identifies the best paths to success, and helps students choose relevant scientific and reference materials. The teacher must also prepare necessary resources to foster interest and creativity, focusing on developing students' creative thinking and skills.

**Organization of Independent Work.** A key goal here is to engage students in intellectual activity while guiding them to act according to certain rules. The teacher encourages students to move from model-based tasks to more complex assignments, drawing on acquired knowledge and utilizing various sources and methods to develop creative thinking.

**Comprehension and Generalization.** Independent work also includes a more complex form of homework that helps solidify the topic.

**Final Stage.** At this point, the teacher assists students in selecting creative tasks that promote self-development and self-education [4].

Interest in lessons or extracurricular topics, teacher explanations, and task assignments contributes to creating a positive learning environment, but this alone does not guarantee the development of sustained interest or creative thinking. The decisive factor is personal creative activity, curiosity, and a student's motivation for self-education.

To increase the effectiveness of methods used during lessons, teachers must select educational tools that facilitate understanding and mastery of the topic. Physics teachers should provide opportunities for students to compare theoretical knowledge with practical experiences and demonstrate the validity of physical laws observed in nature and technology. All educational tools must aim to facilitate knowledge acquisition.

**These tools include:**

- ✓ Practical experiments
- ✓ Information and communication technologies (ICT)
- ✓ Technical teaching aids (TTA)
- ✓ Project-based activities

**1.Practical Experimentation.**

This is a learning tool that helps students understand the fundamental laws of theory and practice. Its use simplifies the assimilation of topics, fosters interest in physics, enhances experimental knowledge and skills, and introduces students to experimental methods of studying physical phenomena.

**Types of experiments include:**

- ✓ Demonstration experiments
- ✓ Laboratory experiments
- ✓ Practical exercises

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- ✓ Home-based experiments and observations
- ✓ Experimental tasks

In practice, experiments aim to study the nature of physical processes, laws, or phenomena. They help draw conclusions through analysis and generalization. Most commonly in schools, demonstration or laboratory experiments are used. Depending on lesson goals, the teacher chooses the appropriate type of experiment.

In a demonstration experiment, which may occur in natural conditions, students typically observe rather than participate. The teacher acts as both organizer and executor. Laboratory work may include frontal lab work, experimental tasks, practical exercises, or home-based experiments. One advantage of laboratory work is students' direct involvement with instruments and materials.

Practical experiments help resolve the following pedagogical challenges:

- ✓ Increase motivation through hands-on application of learned knowledge
- ✓ Confirm or refute student assumptions regarding physical phenomena
- ✓ Focus student attention on essential features of studied topics

**2. Information and Communication Technologies (ICT)**

ICT tools offer powerful ways to visualize abstract concepts and engage digital-native students:

- ✓ Simulations and virtual labs: Allow students to experiment with phenomena that are difficult to recreate in school labs.
- ✓ 3D planetarium software like Stellarium: Helps visualize celestial mechanics interactively.
- ✓ Interactive whiteboards and digital sensors: Provide dynamic, real-time feedback during lessons.
- ✓ Plickers and web quests: Enable formative assessment and inquiry-based exploration.

**3. Technical Teaching Aids (TTA)**

These include equipment and visual aids such as models, diagrams, charts, and physical devices that clarify complex topics. When integrated effectively, TTAs improve the clarity of instruction and enhance student comprehension.

**4. Project-Based Learning (PBL)**

Involving students in short- and long-term physics-related projects allows them to explore topics of interest, conduct investigations, collaborate with peers, and present findings. PBL nurtures creativity, critical thinking, and communication skills-all essential for 21st-century learners.

The development of students' interest in physics and their creative thinking skills is an essential objective of modern education. Teachers play a pivotal role in this process by designing engaging, thought-provoking, and student-centered lessons. Through the use of interactive methods, experiments, ICT tools, and project-based learning, physics education can be transformed into a dynamic and inspiring discipline.

By fostering independent learning and creativity, educators not only enhance students' academic achievement but also prepare them for the challenges of the modern world-where scientific literacy and innovative thinking are critical for success.

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