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HARMONIZATION OF SPIRITUAL AND INTELLECTUAL EDUCATION IN PHYSICS LESSONS: APPROACH BASED ON STEAM, CRITICAL THINKING AND EDUCATIONAL TRAININGS

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Abstract
This article explores innovative approaches to integrating moral and intellectual education in physics lessons. It highlights the potential of applying STEAM methodology, critical thinking, and value-based training to develop students' responsibility, scientific thinking, environmental awareness, and ethical decision-making skills. The study analyzes how combining academic content with character education fosters the holistic development of learners.

Keywords: Physics, moral education, intellectual development, STEAM, critical thinking, training, integration, innovative methods

Introduction

In the current conditions of globalization and technological progress, one of the priority tasks of education is not only the acquisition of knowledge, but also the joint development of the spiritual development and intellectual potential of students. Therefore, every day the need for harmonious conduct of spiritual and intellectual education, the use of innovative methods for this is growing.
In modern education, one of the urgent tasks is the formation of a student not only the level of knowledge, but also thinking, social responsibility, moral views. From this point of view, the STEAM approach (Science, Technology, Engineering, Art,

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Mathematics) also plays an important role in the intellectual and moral development of students.

Main part

Innovative methods are pedagogical technologies aimed at creative thinking, solving problem situations, collaboration and self-development, in contrast to traditional approaches. These methods form not only the intellectual, but also the socio-moral competencies of students.

STEAM is an educational concept that integrates science, technology, engineering, art and mathematics. Through this approach, "students learn to put life knowledge into practice."

Seventh grade physics lessons mainly include topics such as natural phenomena, movements and forces, thermal phenomena. When learning these topics using STEAM, you can implement the following integrations:

• **S (Science):** Conducting experiments on thermal conductivity, observing types of movement.

• **T (Technology):** Real-time analysis of experiment results using digital laboratory tools.

• **E (Engineering):** Creation of a simple model of thermal insulation (for example, which of the vessels from different materials retains heat well).

• **A (Art - Sanat):** Visualization of physical phenomena in the course of classes using drawings or layouts, for example, a graphic representation of thermal radiation.

• **M (Mathematics):** Calculations with formulas, analysis and comparison of results.

In physics, STEAM builds "critical thinking and problem solving skills." Based on experience, they can draw conclusions and develop aspects such as independent research through project activities.

The STEAM approach fosters not only technical skills, but also moral and social values:

✓ Collaboration and mutual respect are cultivated through group work.

✓ Environmental awareness is enhanced by addressing issues such as environmental protection and energy conservation.

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✓ Values such as honesty, responsibility, and appreciation for socially beneficial work are reinforced—for example, through projects on environmentally friendly energy sources.

Critical thinking is a student's ability to analyze, evaluate, and draw informed conclusions. Spiritual strength is internal stability based on moral values, life principles and principles, the ability to distinguish between right and wrong. These two concepts are "inextricably linked": as the student learns independent and critical thinking, he begins to rely on moral principles in his decisions. The main elements of critical thinking are questions, analysis, logical assessment, reliance on evidence, objectivity, openness. By developing these skills, students learn to justify their opinions, respect the opinions of others, and learn the wrong information. This makes them socially and spiritually stable individuals. Critical thinking is also important in the formation of spiritual stability. The critical reader is not given any information or pressure. He can protect himself from "wrong moral examples" (for example, from violence in the media, lies). He becomes conscious, loyal and responsible in decision-making. The teacher also plays an important role in the development of critical thinking. In this case, he must be a "mentor." The teacher does not give the student a ready answer, but encourages him to think. He "teaches to ask questions, criticizes a point of view." To strengthen the moral standing of the student, he offers him reliable thinking.

Educational training is an interactive method that helps to deepen the understanding of morality through science. For example: energy saving, compliance with safety rules, teamwork during the experiment - all this leads to conscious behavior. Thanks to physics, students form not only scientific thinking, but also a conscious attitude to life, responsibility, respect for nature.

The main educational areas related to physics:

➢ Environmental values: energy saving, rational use of natural resources (topics related to thermal conductivity, lighting, types of energy).

➢ Technical culture and hard work: accuracy in the performance of practical work in physics, attention to work.

➢ Safety and responsibility: Understanding responsibility by following safety rules during the experiment.

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➢ Fairness and honesty: do not falsify the results of the experiment, recognize the truth - this is based on the value of scientific honesty.

Examples of ways to form conscious behavior in physics lessons:

Role-playing exercises: speeches on the topics "Energy-saving family," "Correct laboratory behavior."

Panel discussion: "How does extravagance affect a person's life?"

Reflection after the experiment: "What value did I understand during this experiment?"

In physics lessons, the teacher directs the student not only to obtain scientific results, but also to comply with moral standards. In the process of practice, such mental actions as teamwork, waiting in line, respect, and cleanliness are important. After each session, it is important to ask questions, such as, "What responsibility did we feel following this example?"

Conclusion

STEAM helps teach physics not only the scientific level, but also the moral and social development of students. Thanks to this approach, classes will be lively, meaningful and effective. Therefore, the widespread use of the STEAM approach in modern physics is relevant and necessary. The development of critical thinking is the basis of spiritual strength. Each subject should contain questions, situations and tasks that prompt critical thinking. Parents, educators and society must work together. Thanks to the enrichment of physics, not only formulas, but also life values, conscious behavior is formed in students. Learning animates classes, combines knowledge and education.

A harmonious combination of spiritual and intellectual education is the main requirement of modern education. Innovative methods such as STEAM, critical thinking and educational training shape students' minds and hearts. In this regard:

- planning of targeted educational integration at each lesson;
- organization of practical trainings for teachers on innovative methods;
- application in the educational process of methods based not only on theory, but also on activity;

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- After each topic, it is recommended to strengthen the integration of science and education through brief educational training.

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