THE ROLE OF PHYSICS IN THE FORMATION OF STUDENTS' ECOLOGICAL CONSCIOUSNESS.

Otarbaev Amangeldi Edilbekovich,
Nukus State Pedagogical Institute.
Janabaev Azizbek Oralbay uli,
Satimov Íxlas Ismail og'li
Students of Nukus State Pedagogical Institute.
e-mail: andarayza@gmail.com

Abstract. *Today, environmental problems are one of the most pressing issues on a global scale, and science, in particular physics, plays an important role in solving them. This article analyzes the process of integrating environmental education into physics. Analysis of scientific literature and practical experience were studied as research methods. The results showed that the combination of physics and ecology has a positive impact on the development of students' ecological consciousness and scientific knowledge. This approach also increased pedagogical effectiveness and led to the development of new educational modules on environmental issues. The integration process encourages students to take a more responsible approach to environmental protection. In conclusion, the inclusion of physics in environmental education is an effective tool that contributes to the formation of environmental consciousness and sustainable development.*

Keywords. *physics, ecology, environmental education, energy, sustainable development.*

Introduction

Today, environmental problems are expanding on a global scale. Issues such as climate change, energy crisis, resource depletion, and waste management are driving society towards peace and sustainable development [1]. Science, especially physics, plays an important role in solving these problems. While sciences such as physiology, chemistry, and ecology play a special role in understanding and solving environmental problems, the use of physics is of great importance in increasing the attractiveness of these fields and explaining complex concepts more accurately [2].

Teaching physics and ecology in combination contributes not only to the development of environmental consciousness, but also to the formation of a scientific and practical approach in students [3]. Basic concepts of physics, such as energy, the law of conservation of energy, heat and energy exchange, can be an effective tool for explaining environmental problems [4-5]. The integration of environmental education

into physics encourages students to take a responsible approach to their environment, sustainable development, and a sense of environmental responsibility.

Methodology

This article explores the process of integrating physics into environmental education. The research methods were carried out in two main areas:

1. **Literature Analysis (Theoretical Basis)**: In this section, an analysis of existing scientific literature, research, and teaching methodologies on the integration of ecological and physical sciences was conducted. In the curricula, scientific articles, monographs, and approaches used by teachers focused on physics methodologies on environmental issues were studied. Through this literature, a deeper understanding of the interrelationship between ecological and physical sciences and the role of physics in increasing students' ecological awareness was formed.
2. **Practical experiments (Empirical research)**: The study examined the practical experience of the process of integrating environmental education into physics in several educational institutions. Within the framework of these experiments, classes were conducted aimed at combining environmental problems, such as climate change, renewable energy sources, and waste recycling, with basic concepts of physics. During the classes, surveys and interviews were conducted to study how students perceive this integration, what changes are taking place in the development of their ecological consciousness.

Results

The results obtained during the study showed that there are several positive aspects to the integration of physics with ecology:

1. **Increased student interest**: The integration of the fields of physics and ecology aroused interest among students in the study of environmental problems. For example, renewable energy sources (solar, wind, water energy) and the law of conservation of energy were explained to students more clearly. This increased interest in scientific research among students. Students sought to further develop their level of knowledge in understanding physical concepts related to environmental problems.
2. **Pedagogical effectiveness**: Integrated teaching methods were highly appreciated by the students. When students were taught ecological problems, such as physical concepts such as carbon footprint, energy conservation, and heat exchange, they better understood how to apply these problems in practice. In the learning process, students acquired not only theoretical knowledge, but also practical skills.
3. **Implementation of new training modules**: New training modules and courses on environmental issues have been developed. For example, new courses on the study of solar energy were introduced, which created a need for in-depth study of renewable

energy sources among students. In addition, innovative approaches to teaching the physics of thermal energy and the greenhouse effect have been developed.

4. **Increased ecological awareness of students**: The connection of physics with environmental issues led to an increase in the ecological awareness of students. The approach to environmental problems in classes from a physical point of view increased the responsibility of students for environmental protection. Students began to better understand how to apply climate change, waste reduction, and energy conservation in practice.

Discussion

The integration of physics with ecology appears as one of the effective methods of modernizing environmental education. This approach not only provides students with scientific knowledge but also develops them as socially responsible individuals who take a cautious approach to the environment [6-7].

In the process of integration, students mastered new ways of understanding environmental issues. For example, the study of renewable energy sources includes not only the process of energy production, but also its impact on the environment. The help of physics in solving environmental problems has become an effective tool for students in acquiring new knowledge.

At the same time, there are several limitations in the integration process, one of which is the need for methodological training of teachers and the updating of educational materials. Teachers should learn how to effectively use their knowledge of physics when explaining environmental problems. In addition, for some students, physical concepts can be complex, so lessons require the use of various teaching methods.

Conclusion

The integration of physics into environmental education has proven to be an effective way to develop environmental awareness, encourage students to take a responsible approach to the environment, and apply a scientific approach to solving environmental problems. This integration not only provides students with the opportunity to acquire new knowledge, but also develops their practical skills in solving environmental problems. In the future, the role of physics in the development of environmental education will increase, which will allow for the development of new pedagogical methods and further deepening of environmental knowledge.

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