



The Role of National Legislation Aimed at Ensuring Environmental Safety in Developing Students' Environmental Competence in Uzbekistan

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Abstract

This article examines the role of the educational system in studying national legislation for environmental safety and nature protection in Uzbekistan's pedagogical higher education institutions. It explores the development of textbooks, teaching aids, and programs for advancing environmental education and their integration into the curriculum. The effectiveness of ongoing reforms in environmental education, the role of professors, and recommendations for improving the training of environmental specialists are discussed. The article emphasizes the importance of environmental education in developing students' competence and the need to enhance the educational process in line with national legislation.

Keywords: national environmental legislation, environmental education, environmental safety, educational programs, higher education, environmental competence, training of environmental specialists, pedagogical innovations, educational reforms.

1 Introduction

In recent years, environmental protection and issues of environmental safety have become pressing global challenges. In the strategy for sustainable development, environmental education plays a crucial role, and this process is closely connected with national legislation aimed at ensuring environmental safety. In Uzbekistan, several legal documents have been adopted to develop environmental education, including Resolution No. 434 of the Cabinet of Ministers of the Republic of Uzbekistan dated May 27, 2019. Special attention is being given to the broad implementation of environmental knowledge in the education system and the training of specialists in environmental protection.

Legal foundations for students' environmental education have been established, and efforts to improve them are ongoing. Notably, several key resolutions have been adopted by the Cabinet of Ministers of the Republic of Uzbekistan, including Resolution No. 469 on the "Action Program for Environmental Protection in Uzbekistan for 1999-2005" (dated October 20, 1999), the "Program for Environmental Protection in Uzbekistan for 2013-2017" (dated May 27, 2013), and Resolution No. 434 on "Approval of the Concept for the Development of Environmental Education in Uzbekistan" (dated May 27, 2019).

The effectiveness of environmental education is closely linked to pedagogical approaches and educational programs that align with national legislative requirements. While effective systems of

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environmental education have been developed in various countries, there is a need in Uzbekistan to integrate international experience and implement pedagogical innovations [1]. Therefore, this study aims to examine the role of national legislation in improving the process of environmental education, analyze the training of specialists in the field of ecology in higher education institutions, and develop practical recommendations for enhancement.

The study analyzes the reforms carried out in the field of environmental education in the Republic of Uzbekistan, the role of the ecology discipline in the higher education system, and the impact of the legal framework aimed at ensuring environmental safety. The article focuses on assessing the effectiveness of textbooks, teaching aids, and methodological materials developed for studying the foundations of environmental legislation in pedagogical educational institutions. Additionally, it aims to provide recommendations for further improving these educational resources.

2 Materials and Methods

2.1 Literature Review

The relationship between environmental education and national legislation has been extensively studied in various countries, and numerous scientific studies have been conducted in this field. International research has proposed various approaches regarding the significance of environmental education, its integration into the educational system, and its outcomes [2, 3]. For instance, studies conducted by UNESCO (2019) highlighted best practices for integrating environmental knowledge into the pedagogical process. In other countries, particularly in European Union member states, programs have been developed to strengthen environmental education through national legislation [4].

In Central Asia, particularly in Kazakhstan and Tajikistan, the development of environmental education is carried out within the framework of national legislation. Similarly, several state programs have been developed in Uzbekistan, with Resolution No. 434 of the Cabinet of Ministers dated May 27, 2019, providing a legal foundation for improving environmental education. Additionally, the "Concept for the Development of Environmental Education in the Republic of Uzbekistan," approved by the President of the Republic of Uzbekistan, aims to integrate environmental education into the higher

education system [5].

However, existing studies indicate that practical mechanisms for applying national legislation to environmental education are still not fully established. For example, Murtozaeva's research highlights the role of non-governmental and non-profit organizations in advancing environmental education [6], but the connection between national legislation and pedagogical methodologies has not been thoroughly analyzed. Moreover, while the State Committee on Statistics (2021) has reported on indicators of training environmental specialists, there is still a lack of in-depth scientific analysis regarding the actual impact of educational programs [7].

This study aims to fill these gaps by analyzing the actual impact of national legislation on the development of environmental education in Uzbekistan, its role in the pedagogical process, and the effectiveness of ongoing reforms.

2.2 Methodology

This study focuses on examining the impact of national legislation on the development of environmental education using a mixed-methods approach. This method allows for analyzing the legal foundations of the environmental education process and determining the extent of their practical application. The research involved analyzing legal documents, reviewing educational programs in higher education institutions, conducting surveys, and analyzing statistical data.

Firstly, to study the legal framework for environmental education in the Republic of Uzbekistan, normative-legal documents such as Resolution No. 434 dated May 27, 2019, Decree No. PF-4760 dated December 17, 2016, and Resolution No. PQ-131 dated February 16, 2022, were analyzed. These documents define the main directions of state policy in teaching environmental sciences and developing ecological competencies in the education system.

Secondly, the pedagogical activities conducted for environmental education in higher education institutions were analyzed. For this purpose, environmental subjects, textbooks, teaching aids, and methodological guidelines introduced in various universities and institutes of the country were studied. Additionally, to assess the quality of environmental education, surveys were conducted among students and teachers, involving 150 students and 50 educators. The surveys evaluated the effectiveness of environmental education programs

and the level of students' ecological competence development.

Thirdly, a quantitative analysis was carried out based on official reports provided by the State Committee on Statistics and the Ecology Committee of the Republic of Uzbekistan. The analysis examined the number of environmental specialists trained annually, their employment rate, and the challenges faced during practical training in higher education institutions.

Qualitative and quantitative analysis methods were used to process the research results. Legal documents and educational programs were analyzed qualitatively to assess their role in the environmental education system. Quantitative analysis was carried out by processing survey results and official statistical data using statistical software. Additionally, Uzbekistan's experience was compared with that of other countries to evaluate advanced practices in environmental education.

The limitations of the study include the fact that not all higher education institutions were covered, the inability to observe the long-term practical outcomes of environmental education programs, and the need for more detailed empirical research on international experiences. Despite these limitations, this study contributes to a deeper understanding of the role of national legislation in developing environmental education and provides recommendations for implementing pedagogical innovations.

3 Results and Discussion

The results of the study indicate that the legislative reforms carried out to develop environmental education in the Republic of Uzbekistan have positively influenced the pedagogical process. In particular, based on Resolution No. 434 dated May 27, 2019, several measures have been taken to integrate environmental sciences into the higher education system. Currently, more than 20 higher education institutions in the country offer courses on "Ecology" and "Environmental Protection," and environmental education programs have been expanded [8].

Survey results show that 78% of students recognized the relevance of environmental education programs, while 62% expressed that practical training was insufficient. Additionally, 70% of educators highly rated the effectiveness of curricula developed based on environmental legislation, but 55% noted a lack of modern innovative technologies in the teaching

process. The survey results are summarized in Table 1.

According to statistical data, an average of 310 environmental specialists graduate each year, but only 60-65% of them are engaged in practical work. Additionally, the research results indicate a need to increase laboratory work on environmental issues and expand industrial practices for students.

The research results confirm the importance of developing environmental education based on national legislation. While the efforts of the State Committee for Ecology and Environmental Protection (SCEEP) of the Republic of Uzbekistan to develop environmental education have yielded certain positive outcomes, there are still aspects that need improvement and further enhancement.

Global experience shows that the effectiveness of environmental education largely depends on strengthening the connection between theory and practice. For instance, in European Union countries, significant emphasis is placed on laboratory exercises and field research in environmental sciences. In Uzbekistan, however, theoretical education still dominates, resulting in a high demand for practical training and environmental projects.

Additionally, the limited application of modern pedagogical technologies by educators may reduce the effectiveness of environmental education. According to UNESCO (2019), the integration of digital technologies, virtual laboratories, and interactive learning modules is considered a crucial factor in improving the quality of environmental education. In Uzbekistan, the digital components of environmental education are still underdeveloped, restricting students' opportunities to deepen their environmental knowledge.

Furthermore, integrating environmental education with real-world economic and legal issues is necessary. Although current legislation theoretically supports environmental education, practical mechanisms for the commercialization of environmental innovations or the development of ecological entrepreneurship are still not fully established. As a result, a significant portion of graduates with environmental education are compelled to work in fields unrelated to their expertise.

Overall, while there is a strong connection between environmental education and national legislation in Uzbekistan, it is crucial to improve the quality of education by addressing the following aspects:

Table 1. Survey Results on Environmental Education among Students and Educators

Indicator	Percentage (%)	Analysis and Interpretation
Students recognizing the relevance of environmental education	78%	The majority of students highly value the significance of environmental education, reflecting an increased awareness of environmental issues and sustainable development.
Students reporting insufficient practical training	62%	There is a predominance of theoretical knowledge over practical training, indicating a need to strengthen the practical aspects of ecological education.
Educators assessing the effectiveness of curricula based on legislation	70%	Most educators find the existing curricula beneficial, though a deeper analysis of its practical impact is necessary.
Educators highlighting a lack of modern innovative technologies	55%	The shortage of digital and interactive learning technologies may reduce the quality of environmental education, necessitating the broader implementation of educational innovations.

- Expanding laboratory exercises and increasing practical training programs in environmental sciences;
- Introducing digital and interactive learning technologies;
- Developing specialized educational programs focused on fostering environmental innovation and entrepreneurship;
- Integrating international experiences and increasing student participation in environmental projects.

Based on these findings, recommendations for further improvement of the environmental education system should be developed.

4 Conclusions

This study's findings indicate that the legislative reforms undertaken to develop environmental education in the Republic of Uzbekistan have had a significant impact on fostering environmental knowledge and competencies in higher education institutions. Although substantial steps have been taken to integrate environmental sciences into the educational system under Resolution No. 434 of May 27, 2019, certain issues in the field remain pressing.

To enhance the effectiveness of environmental education, it is essential to align national legislation with practical pedagogical approaches. Future

efforts should focus on improving environmental courses through interactive and practical teaching methods, enhancing teacher qualifications, and increasing attention to the commercialization of environmental projects. Additionally, fostering collaboration between the public and private sectors, supporting environmental innovations, and enriching environmental education through digital technologies are recommended areas for further research.

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Mahfuza Murtozayevna Murtozayeva was born on January 2, 1975, in a family of intellectuals in the Jizzakh region. In 1997, she graduated from the Jizzakh State Pedagogical Institute with a degree in Pedagogy, and in 2010, she completed her studies in Macroeconomics at Tashkent State University of Economics.

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As a Doctor of Pedagogical Sciences and an Associate Professor, Mahfuza Murtozayevna Murtozayeva has been supervising over 10 doctoral candidates and independent researchers.

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