E-ISSN: 2997-9439

American Journal of Education and Evaluation Studies

https://semantjournals.org/index.php/ AJEES

| Research Article

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Technologies for Applying Foreign Experiences in Developing Environmental Education in Higher Education Institutions of Uzbekistan

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Abstract: This article addresses the issues of establishing mutual integration with foreign higher education institutions in Uzbekistan, and utilizing the experiences of the most advanced countries, such as Germany, the USA, and Japan, in teaching ecology disciplines in higher education institutions.

Keywords: education, integration, practice, curriculum, production, science, educational and methodological literature, environmental problems.

Introduction.

The issue of ensuring the quality of specialist training in higher education institutions has always been one of the most important and pressing. In particular, we must recognize that one of our main tasks is to ensure the quality of education and enrich its content, implement modern innovative and pedagogical technologies, increase its effectiveness in applying global best practices, and prioritize ensuring educational quality 1. Therefore, one of the directions of quality assurance today is the formation of higher education institutions not only within the country but also with foreign countries, which certainly requires the implementation of the most advanced teaching methods.

Increasing the provision and control of education quality in higher education institutions based on foreign experience demonstrates the relevance of this topic and its necessity today. Foreign experiences are essential today for adapting teaching to new modern educational technologies to ensure the competitiveness of personnel, developing modern methods and principles, and implementing them in practice [2; 3-p]. In this regard, studying the rich experience of higher education institutions in the world's most developed countries, especially the cooperative implementation of educational and scientific achievements in the field of environmental education in our republic's higher education institutions, is of great importance.

The ecologization of education and upbringing in foreign countries started earlier than in Uzbekistan. In Northern Europe and America, the environmental protection strategy has been focused on monitoring its condition at all stages. It has been taken under control that issues of environmental protection are included in all areas of domestic and foreign policies of these

countries, and the international community's attention has been strengthened to ensure that all human activities in the environment fully comply with the principles of sustainable development. One of the noteworthy aspects of the new approach is that the public has been given broad rights to freely obtain and disseminate various environmental information [3:1-p].

It is well known that systematic ecological knowledge, ecological culture of the population, and an ecology-oriented worldview can only be formed among young people, who make up the majority of the population in the countries of the Central Asian region. To solve this complex task, it is necessary to establish a coherent and continuous system of ecological education and upbringing at all levels of education.

Taking into account the increasing global significance of environmental problems, in recent years, along with important priority tasks, special attention has been paid to issues of environmental protection, ecological culture, ecological education and upbringing, and ecological awareness. The urgency of ecological education is determined by the need to protect the nature, ecosystems, and environment of our country from instability and decline, to increase the ecological culture of the population, and by the need for all segments of the population, especially young people, to contribute to these extremely serious and vital issues.

However, a systematic analysis of the process of implementing ecological education shows that serious problems and shortcomings remain in the organization of ecological education, which hinder the full implementation of reforms in this area. In particular:

- The requirements for the mandatory nature of ecology studies, provided for in Article 4 of the Law of the Republic of Uzbekistan "On Nature Protection," are not being adequately implemented in all types of educational institutions.
- The content of existing state educational standards and curricula is not enriched to the necessary extent with ecological knowledge, skills, abilities, and competencies.
- Specific parameters for studying advanced national and foreign experiences in the field of ecological education and forming an ecological culture among students based on them have not been developed.
- The educational programs in effect at all levels of the education system are not coordinated with the essence of national measures aimed at eliminating today's global environmental problems, reducing the level of existing environmental risks, and restoring the natural environment [4; 2-p].

Methodology

Currently, in our republic, ecological education in the continuous education system is implemented in more than 12,000 preschool education institutions, more than 10,000 general education schools, nearly a thousand secondary specialized and professional education institutions, more than 200 higher education institutions, more than 500 postgraduate education institutions, 700 personnel retraining and advanced training faculties and centers, and more than 2,000 extracurricular education institutions. The role and importance of higher education institutions in improving ecological education are becoming extremely important [5; 238-p]. As indicated in Chapter 6 of the Concept of Ecological Education, in accordance with the tasks and areas of activity defined for improving ecological education in the higher education system, reforms and modern pedagogical technologies in the field of ecology are being improved. However, the complete study of the experience of foreign countries in higher education in the field of Ecology, the application of universally recognized teaching methods in practice based on our national mentality, the organization of internships for faculty members specifically to study foreign experiences, and the establishment of methodological exchanges are areas with rather weak indicators. In this regard, it is of great importance to study the following as an experience in

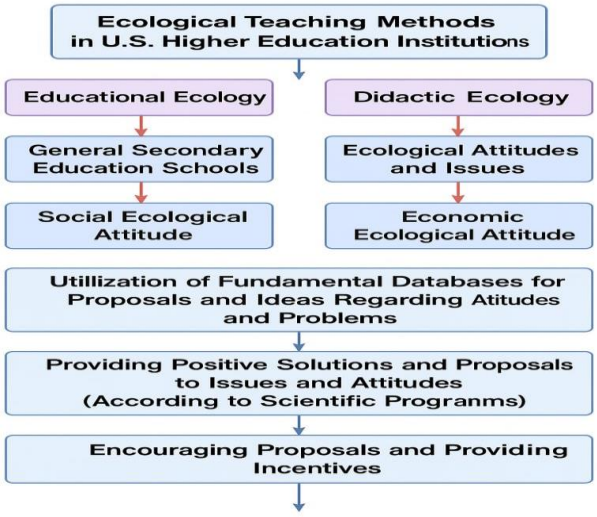
the activities of providing ecological education and upbringing in higher education institutions of the United States of America.

In particular, there are two categories of students in the field of Ecology in American higher education institutions.

1. For a student in a higher education institution, environmental education is seen as the fundamental basis of ecological education. The reason for this fundamental basis is the important role of the "views and attitudes towards environmental protection" acquired in secondary schools. This is seen as a product of initial ecological education and demonstrates the existence and formation of ecological consciousness and thinking. In America, people whose attitude towards the environment has not been formed and whose worldview is relatively low are among the illiterate people in society. This constitutes 2-3 percent of the population (ages 1-18) in a large country. This result is somewhat higher compared to other countries. At this point, a natural question arises: Why is the issue of upbringing prioritized over education in this country? Education should be the core of ecological literacy. There are many debates on this issue. Upbringing is formed at the core of education. Or, there can be no upbringing without education, education is also necessary for upbringing, etc. True, but the sources that give rise to ecological upbringing are - vital daily needs, logical concepts, and observations in nature, taken as examples. This is of great importance in the formation of ecological upbringing for students.

The meaning of ecological education can be determined through the following categories: worldview, values, and behavior, which constitute the main component of the entire system. Each section is placed sequentially and performs a certain function, but all of them show their interaction in the process of organizing ecological education. As a result of ecological education, an ecological worldview based on natural-scientific and humanitarian knowledge, expressing a deep belief of the individual in understanding the unity of man and nature, should emerge. According to some authors, including I.V. Tsvetkova, the consciousness being formed as a result of ecological education about the unity of nature and society can lead to the emergence of social order.

2. In America, obtaining ecological education is more based on scientific ideas, and is characterized by a focus on scientific views and situations capable of establishing the order of relations between nature and society. In this case, it is determined by the creation of short and specific problem situations focused on the solution of global, regional, and local problems that have arisen and may arise between nature and society for the student.



Picture 1. Ecological methods of teaching in US higher education institutions.

It is not important that these problematic situations are completed in one academic hour, but the suggestions and comments on the problematic situations within the given academic hours are important. Interestingly, students are forced to read dozens of literatures on this issue. Otherwise, educational activities are assessed as unsatisfactory and passive.

In American higher education institutions, higher education is strengthened through financial incentives and educational privileges for students, as mentioned above. Educational privileges are closely related to the field of study. For example, traveling to an object that he is interested in and has shown interest in the field of ecology is financially supported by the higher education institution.

In Germany, universities organize and are responsible for developing the necessary teaching programs that cover the innovative achievements necessary to train highly qualified specialists based on market requirements [8; 9-p].

In German universities, the theoretical concepts studied in the field of ecology and environmental protection are based on practice and sustainability. Within the context of universities, the requirements of sustainability based on social ecological responsibility must be understood, developed and implemented. This makes it possible to determine the relationship between freedom and the responsibility of science related to sustainability. This differs slightly from the methods studied in the overseas country. In teaching ecological sciences in German higher education institutions, attention is paid to 2 important and fundamental features: 1st - The freedom of science. 2nd - Responsibility of science.

The freedom of science is aimed at revealing the educational, scientific, creative and innovative aspects of the student. Responsibility in science leads the student to develop specific results, proposals and recommendations.

As we know, Germany is one of the centers of world science and culture. This country is known for its scientific schools with centuries of roots, and scientists and creators such as Goethe, Hegel, Beethoven, Nietzsche, Einstein, and Humboldt [7; 29-p]. In internationally recognized German educational institutions, special attention is paid to the formation of independent thought and a broad worldview. It is very difficult for those who do not make effective use of new methods and the latest information technologies being implemented in the education system. It is impossible to have a place for oneself without knowledge in a society that is rushing towards the destination of progress.

In this regard, it should be especially emphasized that the mandatory 12-year education in Germany opens the doors to great opportunities for young students to determine their future path. This leads young people to strive towards a specific goal, depending on their path and knowledge. In higher education institutions in Germany, training sessions are conducted on the possibility of achieving sustainability in every aspect of the environment through the use of intellectual, i.e., scientific views and mental abilities. Educational directions operating in higher education are mostly based on dual education. Higher education institutions are formed on the basis of production and service organizations, large enterprises, corporations, and higher education institutions affiliated with government agencies, which in turn serves to finance education.

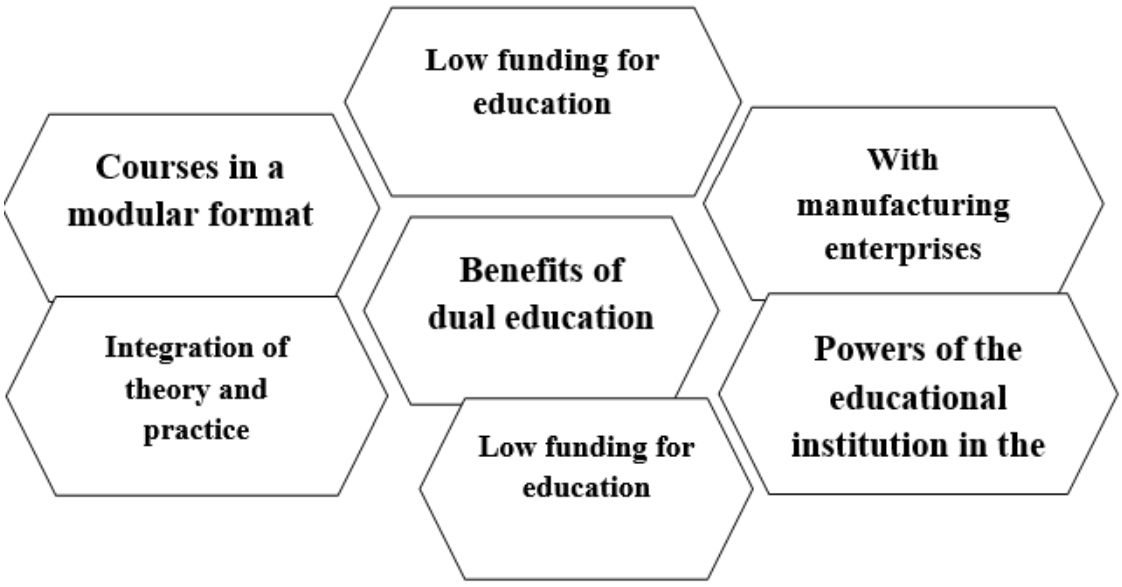
However, regardless of the field of higher education, there are always mechanisms that form a positive attitude towards the environment, human health, nature, and all resources of nature.

Training methods related to Ecology and Environmental Protection have been developed in higher education institutions.

Theoretical education					
Problem	1				
Thinking		1+2			
Basis of thinking			2+3		
Activity				3+4	
Result					4+5
Dual education					
Practice	5				
Efficiency		5+6			
Commercialization			6+7		
Implementation				7+8	

[Picture 2. Methods and key indicators for teaching Ecology sciences in German higher education.]

In particular, German higher education institutions have a unique study module in ecology sciences, based on theoretical and dual education. Theoretical education has 5 general teaching stages. In this, the problem set for a topic within each subject expresses the main objective of the topic. Based on the problem: 1st - thinking, 2nd - justifying thinking, 3 - activity (fundamental or practical aspects of the problem are considered), 4th - result. In this theoretical education, the student is required to make the maximum effort and achieve results during the lesson. Results generated with high clarity serve as the basis for dual education. In the credit module system of higher education, ecology sciences are mostly distributed to theoretical and practical classes on the basis of 8 credits.



[Picture 3. Dual education and its main aspects in the German higher education system.]

In this case, the student is expected to work more on himself and be constantly aware of the achievements and problems in science.

Ecological education is a complex, multifaceted process, the content of which is the ideas of solving modern environmental problems and the concepts of sustainable development. This is an organic process of the structure of the subject, not only in scientific, but also in cultural-historical dimensions. This process is aimed at developing the teaching of interdisciplinary and intradisciplinary content. Higher education in the United Kingdom differs from Germany and the United States in some respects. In this country, with the entry of mankind into the 21st century,

the ecologization of education has become an important strategic principle of social development. The teaching of ecology sciences in the higher education system mainly consists of practical approaches, experimentation, travel, production and environmental integration, human health, psycho-ecological views - culture, relationships, etc.

“The Japanese higher education system is not without reason considered one of the best education systems in the world. As soon as the educational process begins, students receive knowledge in the chosen direction, without being distracted by general sciences (which they studied at school). It is important that higher education institutions pay great attention to independent learning, thus observing the student’s ability to find and analyze information in the process of preparing scientific work and projects. All opportunities are available for this: the activities of libraries of Japanese higher education institutions are very well organized, all information is digitized and easy to find from the university’s online accounts. No matter what field higher education in this country trains personnel for, there is a close integration with the economy.

In Japan, environmental protection, a careful attitude towards nature, and its glorification have been passed down from ancient times to every generation. This is considered the main duty of every Japanese resident.

The methodology of teaching ecology sciences in Japanese higher education institutions is based on modern and practical approaches. These methods allow students to combine theoretical knowledge with practical skills, and serve to develop their independent thinking and ability to solve environmental problems.

1. The Harmony of Theoretical and Practical Knowledge

In Japan, great attention is paid to theoretical knowledge in teaching ecology sciences, but this knowledge is reinforced with practical exercises, field work, and research projects. Students study ecological theories and then have the opportunity to apply this knowledge in real life. For example, through field research, students learn to directly observe ecological processes and analyze them.

2. Use of Modern Technologies

Modern technologies, including GIS (Geographic Information Systems), remote sensing, and other digital tools, are widely used in teaching ecology sciences. These technologies allow students to collect, analyze, and model ecological data. For example, using GIS, students study the spatial distribution of ecological changes and try to identify the causes of these changes.

3. Interactive and Practical Teaching Methods

Interactive methods, group work, discussions, and project-based learning are widespread in the teaching of ecology sciences in Japan. These methods increase students’ independent thinking and problem-solving skills. For example, students, working in groups, study local environmental problems and prepare projects to solve them. Through these projects, they learn to apply theoretical knowledge in practice and work collectively.

4. The Importance and Purpose of Ecological Education

Results

Foreign ecological education programs from the United States Germany and Japan implement specific educational methods leading to enhanced environmental education and useful ecological solutions throughout their teaching systems. Environmental awareness enters the educational system of the United States at an early stage through both organized and secondary education settings. Environmental education establishes its base within primary and secondary schools to develop into higher educational levels with focused ecological scientific study. Real-world problem-solving experiences combined with field research have strengthened student interest and

critical thinking and provided them with essential abilities for resolving current environmental problems. German ecological education bases its foundation on combined theoretical and hands-on training. The German academic system includes sustainability education throughout curriculum while implementing dual education programs that unite classroom work with hands-on industrial learning. Students develop their ability to support sustainable development through applied learning and problem-solving methods because of this effective instructional method. The German approach of granting complete freedom and responsibility to scientific endeavors produces students who can think independently yet focus on international environmental matters. Japan implements ecological theories through practical learning methods that distinguish its educational framework. Geographic Information Systems (GIS) and remote sensing technologies provide students advanced abilities to study ecological information thereby enabling them to develop sustainable answers, and a strong ecological education system exists in Japan through their focus on field research alongside interactive learning and collaborative projects which develops students' practical abilities and theoretical understanding.

Discussion

The analyzed foreign practices demonstrate great potential for Uzbekistan to enhance its ecological education system through implementation of their elements. The integration of ecological education across all higher education levels together with international standards creation will help Uzbekistan develop environmentally aware professionals who address national ecological problems. The main obstacle Uzbekistan encounters while implementing foreign systems requires a proper transformation of these models to match the country's social conditions. The implementation of Western and Japanese models requires Uzbekistan to maintain awareness of its individual educational system and cultural framework and environmental commitment to establish a sustainable educational approach. The strong community-based environmental approach found in countries like the United States and Germany should be integrated into Uzbekistan’s educational framework because this would strengthen its collaborative environmental education initiatives. The educational system of Uzbekistan needs to solve multiple existing problems including deficient mandatory ecology classes and missing advanced domestic and international teaching content alongside inadequate program alignment with environmental policies. Educational quality in ecology would improve dramatically if students were given opportunities for practical experiences which include internships together with field research and modern technological applications. Higher education institutions in Uzbekistan need systemic changes that will grant teachers access to international best practices for studying and practical application. Academic exchange programs with foreign universities and academic development initiatives and international partnerships would let Uzbekistan adopt modern educational research and teaching practices that boost its ecological curriculum. Foreign experiences used in ecological education present meaningful potential to grow environmental education quality and performance throughout Uzbekistan. A combination of best practices from the United States, Germany and Japan together with Uzbekistan-specific factors will enable the country to produce environmentally conscious citizens who battle the country's current sustainability challenges.

Conclusion.

The reason for the special attention to ecology sciences in Japan is due to the country’s limited natural resources and the increasing environmental problems. Therefore, priority is given to sustainable development. One of the main goals in teaching ecology sciences is to increase students’ ecological awareness and teach them to find sustainable solutions. Students understand the global and local impact of environmental problems and are taught to develop innovative approaches to solve these problems.

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