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FORMATION OF CONTINUOUS ENVIRONMENTAL EDUCATION IN PRESCHOOLS AND SCHOOLS: INTERNATIONAL EXPERIENCE

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Abstract
This article analyzes international experience in continuous environmental education and upbringing and presents the results of practical research conducted in preschool institutions and schools in Tashkent. Observations, experimental activities, and surveys of teachers and parents were carried out. The results demonstrate that the inclusion of ecological games, project-based activities, and interactive educational resources contributes to the development of sustainable environmental attitudes in children.

Keywords: Environmental education, environmental upbringing, sustainable development, practice-oriented methods, digital technologies, environmental culture.

Introduction

Modern environmental challenges, such as global warming, biodiversity loss, and water and air pollution, require the development of environmental literacy and

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culture among the younger generation [1–3]. Environmental education has become a key element in preparing citizens capable of making responsible decisions and participating in the conservation of natural resources [4–6].

International experience shows that the most effective approach is continuous environmental education, which begins in preschools and continues through all levels of school education [7–9]. Early environmental education contributes to the development of an emotional connection with nature, critical thinking skills, and responsible behavior [10, 11].

Environmental education as an independent scientific and pedagogical field began to develop actively in the mid-20th century in response to growing global environmental problems, such as pollution, species extinction, and resource depletion [1, 3]. In the 1970s and 1980s, international conferences, including the United Nations Conference on the Human Environment in Stockholm (1972), contributed to the recognition of the need for systematic environmental education [2, 4].

The concept of Education for Sustainable Development (ESD), developed by UNESCO in the early 2000s, integrated the environmental, economic, and social aspects of societal development, providing educators with a comprehensive methodological framework for cultivating sustainable knowledge and practical skills in students [12, 13]. International experience indicates that countries implementing ESD at early stages of education demonstrate higher levels of environmental literacy among preschool and school-age children [5–7].

In Europe and Scandinavia, the integration of environmental programs into national educational standards is accompanied by everyday practical activities: visits to natural sites, project-based learning, and volunteer initiatives [6, 8]. In Asia, including Japan, South Korea, and Singapore, particular attention is given to the use of digital technologies and virtual laboratories for the visual study of ecosystems and sustainable resource use [16, 17].

A practical study conducted in Tashkent showed that incorporating environmental games, project-based activities, and digital resources into the educational process increases children's engagement and fosters a sustainable attitude toward nature. Preschool children actively assimilate basic ecological principles through play-based and hands-on methods, while younger schoolchildren demonstrate initiative in organizing environmental projects and campaigns.

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Research Methods

The following methods were applied in preparing the article and conducting the study:

1. Analysis of literature and official documents from international and national educational organizations (UNESCO, UNEP, national standards of Europe, Scandinavia, USA, Canada, South Korea, Japan, and Singapore) [1–10].
2. Comparative analysis of approaches to environmental education, including early education, practice-oriented methods, and digital technologies [11–15].
3. Generalization of practical experience: "Eco-Schools" projects, environmental clubs, volunteer initiatives, virtual laboratories, and interactive learning platforms [16–20].
4. Empirical study: observation and data collection were conducted in three preschools and two primary schools in Tashkent (2025). Children's engagement in environmental games, project-based activities, and the use of digital resources was observed.
5. Surveys of teachers and parents: conducted anonymously with parental consent; 15 teachers and 40 parents participated to assess the effectiveness of practice-oriented methods and digital technologies.

The combination of literature analysis, international experience, and empirical data allowed for objective conclusions regarding the impact of practice-oriented methods and digital technologies on the formation of continuous environmental education in preschools and schools in Uzbekistan.

Thus, integrating literature review, international practices, and empirical evidence enabled a comprehensive understanding of how practice-oriented approaches and digital technologies influence the development of continuous environmental education in Uzbekistan's early childhood and school education systems.

Research Results and Discussion

Principles of Sustainable Development. International environmental education is based on the concept of sustainable development. The main goal of Education for Sustainable Development (ESD) is not only to convey knowledge but also to develop students' ability to make environmentally informed decisions, understand the consequences of human activities, and actively participate in addressing global

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environmental challenges [12–15]. These principles were applied in practical lessons and games conducted in preschools and schools in Tashkent.

Observations revealed that integrating sustainable development principles into educational and play activities increases children's interest in ecology: 75% of children actively participated in discussions on waste recycling and natural resource conservation (Preschools No. 468 and No. 569; Schools No. 242 and No. 234, Tashkent, 2025).

Practice-Oriented Methods

Environmental Games for Preschool Children (5–6 years old):

- *"Sort the Waste by Color"* — sorting paper, plastic, and glass; develops skills in waste separation.
- *"Who Lives in the Forest?"* — a board game with cards where children identify animals and plants based on their habitats.
- *"Growing Together"* — an interactive game for observing plant growth and learning how to care for plants.

Project-Based Activities for Lower Primary Students (Grades 1–3):

- *"My Mini-Garden"* — creating a miniature garden on a windowsill or school yard; reinforces knowledge about plants.
- *"Environmental Poster"* — creating posters on protecting water, air, and plants using digital tools.
- *"Eco-Diary"* — keeping a diary of observations on the environment and natural changes.

Use of Digital Resources:

- Virtual laboratories for studying ecosystems.
- Online simulations for waste sorting and aquatic ecosystems.
- Interactive platforms with mini-games on sustainable development.

Results:

- 75% of preschool children actively participated in environmental games.
- 72% of lower primary students showed initiative in project-based activities.
- The use of digital technologies increased engagement by 20% compared to traditional methods.

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Table 1. Comparative Analysis of International Experience in Environmental Education

Region/Country	Main Approaches to Environmental Education	Features of Early Childhood Education	Role of Technology	Participation of NGOs and International Organizations
Europe	Integration of environmental topics into standards; "Eco-Schools"	Environmental projects within the curriculum	Interactive platforms	UNESCO, experience exchange programs
Scandinavia	Daily contact with nature; mini-projects	Preschool education	Partial use of digital technologies	Active involvement of local communities
USA and Canada	Practice-oriented learning through projects and campaigns	Elements of early education	Virtual simulations and online courses	NGOs develop programs and training
South Korea, Singapore, Japan	Digital platforms, virtual laboratories	Preschool education using technology	Extensive use of digital technologies	Governmental and international support
International Organizations	Global programs (Decade of ESD, Global Action Program)	Methodological support for all education levels	Development of digital educational resources	UNESCO, UNEP, networks of associated schools

Role of Teachers, Parents, and Digital Technologies

- The effectiveness of the educational process depends on teachers' competence and motivation: 80% of teachers reported high effectiveness of practice-oriented methods, and 60% emphasized the importance of digital technologies.
- Parents play a key role in reinforcing skills at home: collaboration with teachers increased children's engagement by 15–20%.
- The use of digital resources contributed to greater interest and understanding of ecological processes: 75% of preschool children and 72% of lower primary students actively used interactive platforms and virtual laboratories.

Thus, the combination of competent teachers, engaged parents, and modern digital resources promotes the development of a sustainable environmental culture in children from preschool age.

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Conclusion and Recommendations

Conclusions:

1. Continuous environmental education should cover all levels, from preschool to school education.
2. Practice-oriented methods and environmental games significantly enhance the effectiveness of learning.
3. The use of digital technologies makes the educational process visual and interactive.
4. The role of teachers and parents is crucial for reinforcing ecological skills.
5. International cooperation and NGO involvement expand access to innovative methodologies.

Recommendations:

1. Integrate environmental initiatives into preschool and school curricula.
2. Actively use interactive and digital resources.
3. Encourage parental participation in educational and environmental activities.
4. Continue implementing practice-oriented methods and game-based learning.
5. Support international cooperation and participation in global ESD initiatives.
6. Investigate the long-term effects of practice-oriented methods and digital technologies on the development of environmental culture in children.
7. The combined application of practice-oriented methods, digital technologies, and active involvement of teachers and parents ensures the formation of an environmentally literate and responsible generation.

References

1. UNESCO. Education for Sustainable Development (ESD). Paris: UNESCO, 2020.
2. UNEP. Global Environmental Education Programs. Nairobi: UNEP, 2019.
3. Sterling, S. Sustainable Education: Re-visioning Learning and Change. London: Green Books, 2001.
4. National Wildlife Federation. Environmental Education Initiatives in the USA. Washington, 2018.
5. European Eco-Schools Program. Available at: https://www.ecoschools.global (Accessed 2025).

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6. Finnish National Board of Education. Early Childhood Environmental Education Guidelines. Helsinki, 2021.
7. UNESCO Associated Schools Network. Global Initiatives in Environmental Education. Paris, 2020.
8. Barrows, J. Digital Tools in Environmental Education: Global Case Studies, 2022.
9. UNEP. Global Environmental Outlook: Education and Awareness, 2021.
10. Huckle, J., Wals, A.E.J. The UN Decade of Education for Sustainable Development: A Review, 2015.
11. Tilbury, D. Education for Sustainable Development: An Expert Review, UNESCO, 2011.
12. Filho, W.L. Handbook of Sustainability and Sustainable Development in Education, 2019.
13. Cortese, A.D. Education for Sustainability: The University as a Model, 2003.
14. Chawla, L., Cushing, D.F. Education for Strategic Environmental Behavior, 2007.
15. Rickinson, M. Learners and Learning in Environmental Education, 2001.
16. Chang, Y., et al. Digital Technologies in Environmental Education: Asia-Pacific Experience, 2020.
17. Kearney, M., et al. Virtual Labs in Science Education, 2018.
18. Earth Day Network. Global Environmental Education Programs, 2021.
19. Environmental Education Association. EE Practices in North America, 2020.
20. UNESCO, UNEP. Global ESD Initiatives, 2019.