

INNOVATIVE PEDAGOGICAL ACTIVITY OF THE PRESCHOOL TEACHER IN FORMING ECOLOGICAL CULTURE AMONG PRESCHOOL CHILDREN UNDER CLIMATE CHANGE CONDITIONS

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Abstract: *This article analyzes the impact of climate change as a global environmental problem and examines the current issues of developing ecological culture among preschool children. The study highlights the opportunities for fostering environmental awareness, ecological thinking, and a responsible attitude toward nature through the innovative pedagogical activities of preschool educators, the use of modern educational technologies, the STEAM approach, and interactive teaching methods. The findings indicate that the effectiveness of environmental education is directly related to the professional competence, pedagogical skills, and innovative practices of educators. The article substantiates the importance of implementing innovative pedagogical approaches in preschool educational institutions to enhance children's ecological culture and support sustainable development goals.*

Keywords: *ecological culture, climate change, preschool education, educator, innovative pedagogy, environmental education, STEAM approach, ecological competence.*

IQLIM O'ZGARISHI SHAROITIDA MAKTABGACHA YOSHDAGI BOLALARDA EKOLOGIK MADANIYATNI SHAKLLANTIRISHDA TARBIYACHINING INNOVATSION PEDAGOGIK FAOLIYATI

Annotatsiya: *Mazkur maqolada iqlim o'zgarishining global ekologik muammo sifatidagi ta'siri hamda maktabgacha yoshdagi bolalarda ekologik madaniyatni shakllantirishning dolzarb masalalari tahlil qilingan. Shuningdek, tarbiyachining innovatsion pedagogik faoliyati, zamonaviy ta'lim texnologiyalari, STEAM yondashuvi va interfaol metodlardan foydalanish orqali bolalarda ekologik ong, ekologik tafakkur hamda tabiatga mas'uliyatli munosabatni rivojlantirish imkoniyatlari yoritilgan. Tadqiqot natijalariga ko'ra, ekologik ta'limning samaradorligi tarbiyachining kasbiy kompetentligiga, pedagogik mahoratiga va innovatsion faoliyatiga bevosita bog'liq ekanligi asoslangan.*

Kalit so'zlar: *ekologik madaniyat, iqlim o'zgarishi, maktabgacha ta'lim, tarbiyachi, innovatsion pedagogika, ekologik ta'lim, STEAM, ekologik kompetensiya.*

ИННОВАЦИОННАЯ ПЕДАГОГИЧЕСКАЯ ДЕЯТЕЛЬНОСТЬ ВОСПИТАТЕЛЯ ПО ФОРМИРОВАНИЮ ЭКОЛОГИЧЕСКОЙ КУЛЬТУРЫ У ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА В УСЛОВИЯХ ИЗМЕНЕНИЯ КЛИМАТА.

Аннотация: В данной статье проанализированы влияние изменения климата как глобальной экологической проблемы, а также актуальные вопросы формирования экологической культуры у детей дошкольного возраста. Освещены возможности развития экологического сознания, экологического мышления и ответственного отношения к природе у детей посредством инновационной педагогической деятельности воспитателя, использования современных образовательных технологий, STEAM-подхода и интерактивных методов обучения. Результаты исследования показывают, что эффективность экологического образования непосредственно зависит от профессиональной компетентности воспитателя, его педагогического мастерства и инновационной деятельности.

Ключевые слова: экологическая культура, изменение климата, дошкольное образование, воспитатель, инновационная педагогика, экологическое образование, STEAM-подход, экологическая компетентность.

INTRODUCTION

One of the most pressing global challenges facing humanity in the XXI st century is climate change.

The increase in atmospheric temperatures, depletion of natural resources, intensification of desertification processes, water scarcity, and the reduction of biodiversity are environmental issues that require countries around the world to strengthen environmental protection and ensure ecological security.

Preventing these problems and mitigating their negative consequences are closely linked to raising a generation with a high level of ecological culture.

Ecological culture reflects an individual's conscious attitude toward nature, ecological knowledge, environmental values, and ecological responsibility manifested in practical activities. The formation of ecological culture takes place throughout all stages of the lifelong education system.

However, its foundation is laid during the preschool period. At this age, children's worldview, moral qualities, interests, and attitudes toward nature are actively developed. Preschool children are naturally inclined to observe natural phenomena and show interest in plants and animals.

Therefore, environmental education and upbringing are particularly effective during this developmental stage. Developing children's careful attitude toward nature, ecological responsibility, and skills for conserving natural resources is an essential factor in raising environmentally conscious individuals in the future.

Today, in the Republic of Uzbekistan, the development of environmental education and the formation of ecological awareness and ecological culture among the younger generation are recognized as priority directions of state policy.

Regulatory and legal documents adopted in the country concerning environmental security, sustainable development, and the modernization of the education system require improving the effectiveness of environmental education.

This necessitates organizing environmental education in preschool institutions on the basis of modern pedagogical approaches. In this process, the role and significance of preschool teachers are of particular importance. Teachers serve as the primary pedagogical agents who shape children's ecological knowledge, foster positive attitudes toward nature, and develop environmentally responsible behavior.

Therefore, modern preschool teachers should possess not only environmental knowledge but also the ability to apply innovative pedagogical technologies, effectively organize educational activities, and engage children in environmental practices. Innovative pedagogical activity is aimed at improving the effectiveness of education through the implementation of new methods, tools, and technologies.

In particular, the STEAM approach, project-based learning, research activities, problem-based situations, environmental excursions, and digital educational technologies have emerged as effective means of developing ecological culture among preschool children. These approaches contribute to the development of children's independent thinking, observation skills, creativity, and environmental responsibility. The analysis of scientific and pedagogical literature indicates that issues related to environmental education and the formation of ecological culture have been extensively studied by both foreign and domestic scholars. However, the improvement of innovative pedagogical activities of preschool teachers in fostering ecological culture among preschool children under climate change conditions requires further in-depth investigation.

From this perspective, providing a scientific basis for the innovative pedagogical activities of preschool teachers in the formation of ecological culture among preschool children, improving its content, forms, and methods, and ensuring its effective implementation in educational practice constitute one of the urgent pedagogical challenges of the present day.

LITERATURE REVIEW

The issues of developing ecological culture among preschool children and improving environmental education under climate change conditions have been extensively studied by both foreign and domestic scholars. The analysis of scientific sources indicates that the effectiveness of environmental education is closely related to taking into account children's age and psychological characteristics, introducing innovative pedagogical technologies into the educational process, and developing teachers' environmental competence. M. Montessori occupies a special place in the development of preschool education theory. According to her, children enrich their understanding of the environment and acquire ecological values through direct interaction with nature. In Montessori pedagogy, observing nature, caring for plants and animals, and learning through practical activities play a significant role. This approach is consistent with the contemporary content of environmental education.

In J. Dewey's theory of pragmatic pedagogy, special emphasis is placed on experience-based learning. Dewey argued that children should acquire knowledge not in a ready-made form but through practical activities. This idea serves as one of the

scientific foundations for organizing observation, experimentation, and project-based activities in environmental education. L.S. Vygotsky's sociocultural theory of development highlights the importance of the social environment in shaping a child's personality. According to this theory, the pedagogical influence of teachers and parents is a crucial factor in the formation of ecological culture. In particular, the role-modeling behavior of adults is of great importance in developing environmental concepts among preschool children. Issues related to sustainable development and environmental education have also been widely explored by UNESCO. In UNESCO's Education for Sustainable Development program, environmental education is regarded as an important factor that enables individuals to understand environmental problems, approach them responsibly, and follow the principles of sustainable development. This concept has contributed to establishing modern methodological foundations for the formation of ecological culture. Environmental education in preschool settings has also been investigated by Uzbek scholars. In particular, Z.T. Nishonova and D.A. Alimuhamedova developed a methodology for forming ecological culture in children and provided a scientific basis for the content, forms, and methods of environmental education. The authors emphasize the interrelationship between ecological knowledge, ecological awareness, and environmentally responsible behavior. Studies conducted by local pedagogical researchers recognize the creation of an environmentally enriching educational environment, the establishment of nature corners, excursions, observations, and the use of environmental games as important tools for developing ecological culture among preschool children. The analysis of the reviewed scientific literature shows that although the problem of forming ecological culture has been sufficiently studied, the issue of improving the innovative pedagogical activities of preschool teachers in developing ecological culture among preschool children under climate change conditions remains a relevant scientific problem that requires further investigation.

RESEARCH METHODOLOGY

The scientific novelty of this study lies in clarifying the content of the innovative pedagogical activities of preschool teachers in the formation of ecological culture among preschool children under climate change conditions. Furthermore, effective ways of integrating modern pedagogical technologies into the environmental education process were substantiated. The selected methodological approach and research methods made it possible to comprehensively examine the problem, identify factors that enhance the effectiveness of environmental education, and develop practical recommendations for improving the formation of ecological culture among preschool children.

RESEARCH RESULTS AND DISCUSSION

During the research process, the significance of the innovative pedagogical activities of preschool teachers in developing ecological culture among preschool children under climate change conditions was examined. The obtained results demonstrated that the effectiveness of environmental education largely depends on

teachers' professional competence, environmental knowledge, and their level of proficiency in applying modern pedagogical technologies.

The analysis revealed that although environmental knowledge is formed when environmental education is organized through traditional explanatory methods, environmentally responsible behavior and practical skills do not develop sufficiently.

In contrast, educational activities organized on the basis of innovative pedagogical technologies increase children's interest in environmental processes and contribute to the development of independent thinking and problem-solving skills.

The study found that environmental activities organized through the STEAM approach were particularly effective. Specifically, children's involvement in creating various models from recyclable materials, conducting experiments on plant care, and completing practical tasks related to water and energy conservation contributed to the solid acquisition of environmental knowledge.

Such activities not only fostered a sense of responsibility toward nature but also enhanced children's creativity and research abilities. Furthermore, the use of project-based activities in environmental education produced positive outcomes. Children who participated in projects such as "Green Space," "One Child – One Sapling," "Friend of Nature," and "Clean Environment" demonstrated significant improvement in environmental responsibility, teamwork skills, and practical abilities related to environmental protection.

Through these projects, children gained initial understanding of environmental problems and possible solutions. The research findings also highlighted the importance of an environmentally enriching educational environment. Nature corners, mini-laboratories, observation areas, and environmental play centers organized within preschool groups enabled children to connect environmental knowledge with practical activities. In particular, direct observation of natural phenomena had a positive impact on the development of ecological thinking. The discussion revealed that the effectiveness of ecological culture formation is not limited solely to the activities of educational institutions.

Cooperation with parents is also a crucial factor. Environmental campaigns, tree-planting events, family-based environmental projects, and awareness-raising activities expand children's opportunities to apply environmental knowledge in their daily lives. At the same time, several challenges were identified during the study. These include the insufficient environmental competence of some preschool teachers, limited methodological support for the application of innovative teaching methods, and a lack of modern didactic materials related to environmental education.

These factors negatively affect the effectiveness of environmental education.

The research findings confirmed that the innovative pedagogical activities of preschool teachers play a significant role in fostering ecological culture among preschool children under climate change conditions.

It was established that environmental education organized through innovative pedagogical technologies serves as an effective means of developing environmental knowledge, ecological thinking, and environmental responsibility in children.

CONCLUSION AND RECOMMENDATIONS

Today, climate change is recognized as one of the most important environmental problems facing humanity.

Reducing the negative consequences of this issue and increasing the environmental responsibility of future generations, environmental education plays a crucial role.

In this regard, the formation of environmental culture in preschool children is considered one of the most relevant directions of modern pedagogy.

The research results showed that the effectiveness of environmental culture formation is directly related to the teacher's professional competence, ecological knowledge, and innovative pedagogical activity. It was found that the use of modern pedagogical technologies—especially the STEAM approach, project-based learning, research methods, and interactive teaching strategies—is highly effective in developing ecological awareness, ecological thinking, and environmental responsibility in preschool children.

It was also established that creating an environmentally developing educational environment, organizing direct interaction with nature, and implementing environmental observations and practical activities not only strengthen children's ecological knowledge but also help form a conscious and responsible attitude toward nature.

During the research, the importance of cooperation between educational institutions, families, and communities in improving the effectiveness of environmental education was also identified.

Active parental involvement in the process of environmental education was observed to have a positive impact on the stable formation of ecological values in children. Based on the conducted scientific analysis, the following recommendations were developed:

1. Improve professional development courses aimed at enhancing preschool teachers' ecological competence in preschool education institutions.
2. Enrich environmental education content based on the STEAM approach and increase the proportion of practical activities.
3. Equip each group with modern didactic tools for creating an environmentally developing environment and nature corners.
4. Involve children more widely in ecological projects, observations, and experimental activities.
5. Strengthen the interactivity of environmental education through the use of digital educational technologies.
6. Systematically organize environmental campaigns and awareness-raising activities in cooperation between families and preschool institutions.

In conclusion, in the context of climate change, the innovative pedagogical activity of teachers is a key pedagogical factor in shaping environmental culture in preschool children.

The effective use of modern educational technologies and innovative approaches enables the upbringing of a young generation that is environmentally responsible, attentive to nature, and supportive of sustainable development principles.

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