

**DEVELOPING STUDENTS' RESEARCH ABILITIES THROUGH CREATING SMALL  
ECOLOGICAL PROJECTS IN NATURAL SCIENCE AND READING LITERACY  
LESSONS**

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**Abstract.** This article highlights the pressing pedagogical issues of shaping a conscious attitude toward the environment and developing research skills in primary school students. The main objective of the study is to reveal the methodological possibilities of implementing small ecological projects in the lesson process through the mutual integration of natural sciences and reading literacy subjects. Completely moving away from traditional memorization methods, practical approaches aimed at developing students' logical and critical thinking are deeply analyzed.

**Keywords.** Primary education, small ecological projects, reading literacy, natural sciences, research ability, integrative approach, digital educational resources, digital citizen culture.

**INTRODUCTION.** The primary education stage serves as a foundational period in shaping students' worldview regarding the environment and their conscious attitude toward nature. In modern educational processes, moving students away from traditional memorization and passive information reception to develop their research abilities has become a pressing pedagogical issue. Integrating the subjects of natural sciences and reading literacy serves to seamlessly connect students' text comprehension skills with their ability to analyze natural phenomena on a scientific basis. Small ecological projects are the most optimal means of applying this integration into practice.

The main objective of this study is to scientifically and methodologically substantiate how the application of small ecological projects during lessons can develop primary school students' capacity for independent inquiry, information filtering, and drawing conclusions. Concurrently, embedding "Digital Citizen" competencies into the educational process ensures that students navigate the information environment appropriately. By applying a value-based approach to the process, the aim is to harmonize the ideas of a careful attitude toward nature found in the heritage of Eastern thinkers with modern educational resources. Such an approach is considered a practical step aimed not only at cultivating an ecological culture in young students but also at increasing their interest in mastering subjects and developing their social engagement. Embracing STEAM technologies and innovative methods in lessons awakens children's enthusiasm to find solutions to ecological problems encountered in their daily lives. Furthermore, this situation creates a direct foundation for the future generation to deeply feel their personal responsibility in preserving nature. The practical significance of the study is that it provides supportive scientific conclusions for pedagogical scientists.

**METHODOLOGY.** During the research process, methods of pedagogical observation, comparative analysis, experimental testing, and practical project design were systematically utilized. The scope of scientific inquiry encompassed lesson sessions organized with the integration of reading literacy and natural sciences subjects among primary school students in general education schools. Within the framework of the research, control and experimental groups consisting of third and fourth-grade students were formed. Deviating from traditional teaching frameworks, elements of the STEAM educational approach and "Digital Citizen"



competencies aligned with international standards were gradually implemented in the experimental group's lessons.

During the lessons, students were divided into small working groups and tasked with deeply reading various texts on ecological themes, logically analyzing their content, and creating practical mini-projects aimed at solving the identified problems. While literary and popular science texts related to nature conservation were studied in reading literacy sessions, ample opportunities were created to practically apply the theoretical knowledge acquired in natural science classes. The skills of independent information searching, processing, and public presentation by young researchers using digital educational resources and multimedia tools were regularly studied.

In the control group, education was conducted based on conventional textbooks and standard curricula. Conversely, in the experimental group, inquiries and practical projects aimed at studying the environment, such as plant care and the observation of natural phenomena, were systematically introduced. During pedagogical observations, the dynamics of change in the conditions specially created for children to engage freely based on their natural interests were recorded. The ecological projects prepared by the students served as a crucial criterion for evaluating their independent thinking, teamwork culture, and capacity to critically analyze information. All gathered data was summarized through qualitative analysis, and concluding statements were formulated.

**RESULTS.** The conducted experimental testing clearly demonstrated that information filtering and logical reasoning skills among experimental group students grew significantly. During the process of working on small ecological projects, students mastered theoretical knowledge and directly applied it to everyday practice. By embedding "Digital Citizen" culture into education, children's skills in safely searching for internet information developed. When defending projects like water conservation, waste sorting, and plant care, experimental group children expressed personal opinions freely with scientific substantiation. Compared to the control group, evidence recorded that these students possessed a much higher conscious, value-based attitude toward nature. Furthermore, reading comprehension levels rose, and students demonstrated the capacity to independently analyze cause-and-effect relationships in nature. In collaborative work, a mutual exchange of ideas and a strong sense of involvement in environmental problems were observed. All obtained quantitative and qualitative indicators fully confirmed that the proposed integrative methodology yields high outcomes in practical education.

**DISCUSSION AND CONCLUSION.** The research results indicate that abandoning traditional approaches in engaging primary school students in studying the environment and applying an integrative methodology rapidly enhances their cognitive potential. By uniting the subjects of natural sciences and reading literacy around a single ecological idea, students do not merely receive information from the text but acquire the capacity to analyze it. When the obtained data is compared with the conclusions of other international studies, the positive impact of the practical project design method on child psychology and worldview is absolutely confirmed. Small ecological projects do not limit the student to the rules in the textbook; on the contrary, they encourage independent inquiry. It is particularly noteworthy that by gradually introducing a "Digital Citizen" culture into the educational process, the younger generation's social responsibility in the modern information environment has been shaped.

In this context, it is worth noting that applying the ideas of kindness and a value-based approach to nature found in the heritage of Eastern thinkers to contemporary pedagogy cultivates



high human qualities in young researchers. Observing changes in nature through practical activity awakens in students a sense of not being indifferent to ecological problems. This, in turn, serves to develop the younger generation as individuals who actively respond to important issues not only within the scope of science but across society as a whole.

In the future, to more broadly implement this methodology into the educational system, it is advisable to utilize digital educational resources even more and regularly incorporate advanced pedagogical technologies into educational programs. Continuously supporting students' project-based inquiries must become one of the main directions of the methodological field. The ultimate conclusion is that regularly organized creative research in schools harmonizes students' mental skills and creates a reliable foundation for future practical activities. This approach not only teaches children to live in harmony with the environment but also fully accomplishes the task of preparing them as individuals with independent thinking.

## References:

1. Abdurahmanov, S. T., & Nazarova, D. (2026). Boshlang'ich sinf o'quvchilarida ekologik ta'lim-tarbiyani rivojlantirish [Developing environmental education in primary school students]. *Namangan davlat pedagogika instituti ilmiy-uslubiy jurnali*, 2(1), 45-51.
2. Azimov, U. (2022). Psixologik bilimlar asosida ekologik tarbiyani rivojlantirish [Developing environmental education based on psychological knowledge]. *Zarafshon nashriyoti*.
3. ISTE. (2024). Raqamli fuqaro O'quvchilar uchun xalqaro ta'lim texnologiyalari standartlari [Digital citizen International educational technology standards for students]. International Society for Technology in Education.
4. Shermatova, U. (2024). Ecological education teaching in primary class methodology. *Pedagogical Cluster-Journal of Pedagogical Developments*, 2(4), 97-105.
5. Tosheva, D. I., & Jamolova, G. K. (2021). Ekologicheskoe vospitanie mladshikh shkolnikov [Ecological education of younger schoolchildren]. *Voprosi nauki i obrazovaniya*, 19(1), 46-51.
6. Tursunova, M. (2022). Boshlang'ich sinf o'quvchilarida ekologik madaniyatni shakllantirish usullari [Methods of forming ecological culture in primary school students]. *Pedagogika ilmi*, 12(4), 78-89.
7. Xolmurodov, B. (2018). Tabiatshunoslik darslarida ekologik tarbiya amaliyotini takomillashtirish [Improving environmental education practices in natural science classes]. *O'qituvchi nashriyoti-matbaa ijodiy uyi*.
8. Yakubova, D., & Karimova, S. (2025). Tabiatshunoslik va o'qish savodxonligi darslarini integratsiyalash orqali o'quvchilarning tadqiqotchilik qobiliyatini o'stirish [Developing students' research abilities through the integration of natural science and reading literacy lessons]. *Ta'lim jarayoni jurnali*, 5(2), 112-118.

