UDC 377.5.02:37.016
IRSTI 14.33.09
https://doi.org/10.48371/PEDS.2025.77.2.030

ASSESSMENT OF THE EFFECTIVENESS OF PEDAGOGICAL METHODS FOR TEACHING ENVIRONMENTAL RESOURCE MANAGEMENT

*Abdrakhimova A.O.[1], Borankulova D.M.[2]
*[1,2]Abai Kazakh National Pedagogical University, Almaty, Kazakhstan

Abstract. This article discusses the problem of evaluating the effectiveness of pedagogical methods for teaching environmental management in school geography courses. Modern society faces numerous environmental challenges, which require the formation of an environmentally literate generation capable of rationally using natural resources and supporting sustainable development. The purpose of the study is to identify the most effective methodological approaches and pedagogical technologies that contribute to improving students' knowledge of environmental management and fostering their environmental consciousness. The study analyzed existing educational programs and teaching methods for environmental management in school geography. Surveys and tests of students were conducted, as well as interviews with geography teachers to gather their opinions and experiences on the topic. The focus was placed on aspects such as the use of interactive teaching methods, the introduction of design and research projects, and the role of extracurricular activities in the educational process. The results of the study showed that the use of modern pedagogical technologies, such as problem-based learning, case studies, and digital educational resources, significantly increases students' interest in studying environmental management and contributes to a deeper understanding of the material. Additionally, involving students in practical activities related to environmental projects and actions helps foster sustainable environmental awareness and responsibility. Based on the data obtained, recommendations have been developed to help teachers improve their methods for teaching environmental management. In conclusion, the importance of an integrated approach to environmental education is emphasized, one that combines both theoretical knowledge and practical activities to maximize the effectiveness of educating and raising environmentally literate citizens.

Key words: Pedagogical methods, innovative approaches in teaching, evaluation of the effectiveness of teaching, curriculum development, digital educational tools, environmental education, environmental literacy, sustainable environmental management

Introduction

Given the global environmental challenges, such as climate change, water pollution and the depletion of natural resources, the task of fostering environmental responsibility and knowledge of resource management among students has become extremely relevant. In Kazakhstan, this issue becomes

particularly significant against the backdrop of ongoing environmental problems, such as high levels of air pollution and the depletion of water resources. In his State-of-the-Nation Address of Kazakhstan, the President of the country, Kassym-Jomart Tokayev, emphasized the need to transition to sustainable development and strengthen environmental culture among citizens [1]. In this regard, it is important to assess which pedagogical methods and approaches are effective in fostering environmental responsibility and knowledge of natural resource management among students. Based on this, the idea of the study is to evaluate the effectiveness of pedagogical methods and technologies aimed at increasing environmental awareness and fostering environmental responsibility among students within the framework of the school geography curriculum. When implementing this idea, the following main provisions were followed:

- evaluation of the effectiveness of pedagogical methods for teaching natural resource management in the school geography curriculum, with a focus on the active implementation of innovative educational technologies, including geographic information systems and computer models for studying natural resources;

- results of a survey of geography teachers regarding their attitudes towards modern pedagogical methods for teaching natural resource management and their perceptions of the use of innovative technologies to enhance educational effectiveness in the context of sustainable development.

Natural resource management is a key issue for Kazakhstan, as the country faces numerous environmental challenges. Issues related to the rational use of natural resources, ecosystem protection and sustainable development are on the agenda not only for the government but also for the country's education system.

Kazakhstan is one of the largest countries in the world by area; however, many environmental issues, such as the depletion of water resources, air pollution, deforestation and soil degradation, have a significant impact on the state of the environment. For example, the Aral Sea, once one of the largest inland water bodies in the world, has nearly disappeared due to the excessive use of water resources for agricultural irrigation. Air pollution issues, particularly in major cities such as Almaty and Shymkent, also remain pressing.

Furthermore, Kazakhstan is an important participant in international environmental initiatives, such as the Paris Agreement on climate change, which requires the country to enhance environmental literacy and train specialists capable of addressing environmental issues at both the societal and governmental levels [2]. In response to these challenges, the country is actively developing and implementing programs aimed at environmental education and sustainable development.

One of the key tools for enhancing environmental literacy is school education, particularly the study of environmental topics in geography lessons. The school geography curriculum in Kazakhstan traditionally includes sections related to natural resources, their use, environmental protection and sustainable development. However, the effectiveness of these programs remains questionable,

necessitating a thorough analysis of existing methodologies and educational programs.

In 2017, Kazakhstan adopted a new standard for school education, which included updated geography curricula. These programs placed a particular emphasis on the study of natural resources, their use and environmental protection. For instance, in the section "Natural Resources of Kazakhstan", students learn about the types of natural resources (for example, mineral, water and forest resources), the challenges of their development, and methods of sustainable resource management [3]. It is important to note that, in this context, geography is taught not only as a subject but also as a means of fostering environmental responsibility and literacy among students.

Despite this, studies show that educational programs are often limited to traditional teaching methods, such as note-taking and text-based assignments, which do not always effectively promote a deep understanding of ecology and resource management. This is confirmed by research conducted by the Ministry of Education and Science of the Republic of Kazakhstan and by low results in scientific literacy within the framework of the Programme for International Student Assessment (PISA). According to the PISA-2022 results, Kazakhstani students performed poorly in environmental education, ranking 49th out of 81 countries (ranked 69th in PISA-2018) in terms of knowledge related to sustainable development and ecology [4]. Moreover, only 44% of 15-year-old students in Kazakhstani schools can solve tasks related to real-world environmental issues, indicating a low level of environmental literacy among youth. This highlights the need for more innovative and active teaching methods. Therefore, *the aim of the study* is to assess the effectiveness of pedagogical methods for teaching natural resource management within the school geography curriculum and identify the optimal approaches and technologies that can improve students' knowledge levels.

Materials and methods

The research employed various data collection methods, including the analysis of existing educational programs and methodologies, surveys of students and interviews with geography teachers. The primary data sources were:

1. Results from the PISA study, which evaluates students' knowledge in various disciplines, including ecology and sustainable development.
2. The President of Kazakhstan's addresses on sustainable development and environmental protection, which serve as key guidelines for the country's educational policy.
3. Surveys and interviews with geography teachers to gather their views on teaching methods for natural resource management and their effectiveness.

Participants were selected through a combination of random sampling and recommendations from school administration, ensuring a diverse representation of students and teachers from various urban and rural schools. Questionnaire validation was conducted via a pilot survey in one school, and based on feedback, minor adjustments were made to improve clarity and relevance. All participants

were informed about the anonymous and voluntary nature of their participation, and ethical considerations were observed in accordance with national research guidelines.

The research methodology consisted of two main stages:

1. A survey of 9th–11th grade students studying geography. The survey used a questionnaire consisting of both closed and open-ended questions.

2. Interviews with secondary school geography teachers, where they shared their experiences and opinions on the teaching methods they use.

Questions for students:

1. How often are natural resource management issues discussed in geography lessons?

2. What teaching methods help you better understand ecological and natural resource problems?

3. What role do you think practical lessons play in teaching environmental issues?

4. Are you familiar with environmental protection projects and initiatives that your school participates in?

5. How important do you think the study of environmental issues is within the school geography curriculum?

Questions for geography teachers:

1. What pedagogical methods do you use to teach natural resource management?

2. How would you assess students' interest in lessons on environmental topics?

3. How effective are interactive methods (e.g., project work, problem-solving discussions) in your teaching?

4. Do you believe that involving students in practical activities (e.g., environmental projects, campaigns) helps in developing their environmental responsibility?

5. What do you think are the challenges in teaching natural resource management in the school geography curriculum?

Results

1) Analysis of Teaching Methodologies for Environmental Education in School Geography. In recent years, there has been a growing interest in modern teaching methods in Kazakhstan, such as project-based learning, problem-based learning and the use of digital technologies. However, the implementation of these methods in school education has been relatively slow. Traditional methods, such as lectures and rote memorization, remain dominant in the educational system [5]. One of the key aspects of the study is the analysis of how geography teachers utilize contemporary pedagogical methods to teach environmental education in schools across Kazakhstan. In 2020, the Ministry of Education of Kazakhstan conducted a survey among 500 geography teachers regarding the use of innovative teaching methods in the classroom. The survey results among the teachers showed:

• Use of project-based learning: 42% of teachers actively implement project-based learning.

• Use of case studies: 28% of teachers apply case studies in geography instruction.

• Interactive methods: 18% of teachers use interactive methods, such as debates and role-playing.

• Digital educational resources: 12% of teachers actively use digital resources in teaching (Figure 1) [6].

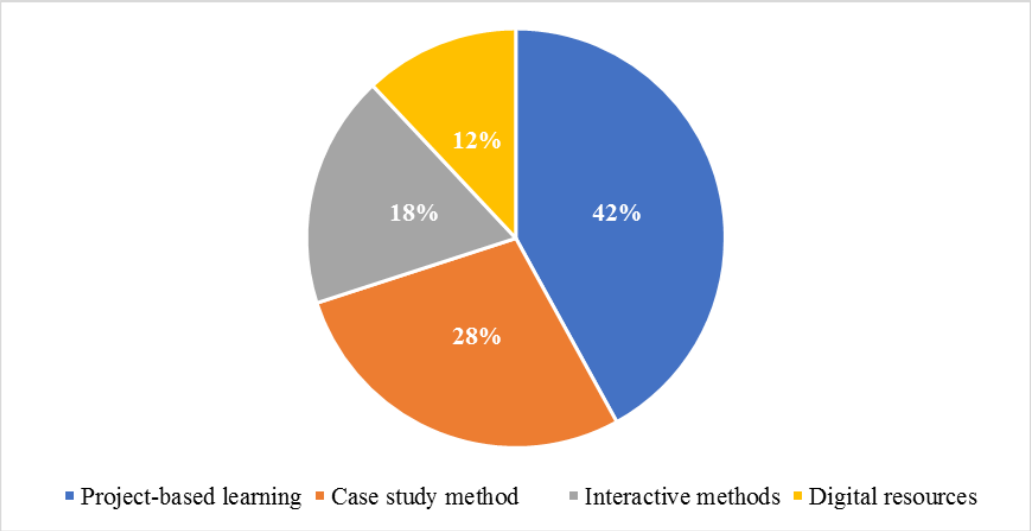

Figure 1 – Use of Innovative Methods in Teaching Geography in Kazakhstan

As part of the analysis of current educational programs, an interview was conducted with 50 geography teachers from various regions of Kazakhstan, who were surveyed regarding the effectiveness of existing educational materials and programs on environmental education. The main questions of the survey included:

1. How often do you incorporate environmental topics into your geography curriculum?

2. What methods do you use to explain the importance of sustainable environmental resource management?

3. Do you consider the environmental education programs to be sufficiently effective?

4. What challenges do you see in teaching students about environmental resource management?

The survey results are presented in Figure 2 [6]:

• 65% of teachers believe that environmental education programs are outdated and do not address contemporary issues.

• 54% of teachers state that the educational materials lack enough practical tasks and real-life case studies, making them difficult to use.

• 78% of teachers reported that their students are insufficiently engaged with environmental literacy issues.

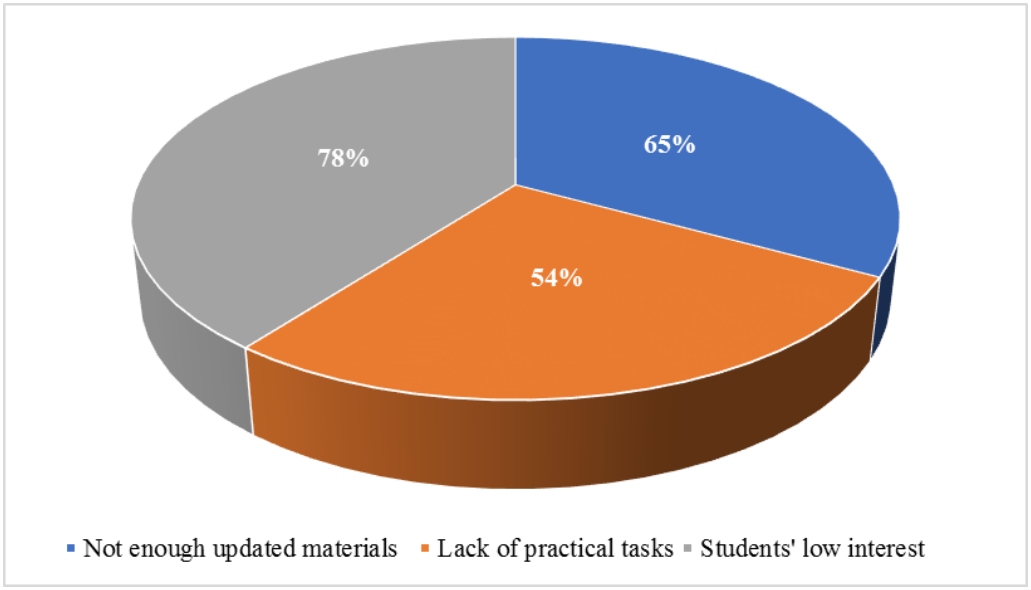

Figure 2 – Evaluation of the Effectiveness of Environmental Education Programs

Based on the data analysis, the following conclusions can be drawn:

1. *Low level of implementation of innovative methods:* despite the presence of innovative pedagogical approaches such as project-based learning and case studies, only 42% of teachers actively use project-based learning, indicating insufficient teacher preparation or a lack of resources to implement such methods.

2. *Low PISA results in environmental literacy:* Kazakhstan ranks low in the global environmental literacy index, reflecting a low level of student preparation in sustainable development and environmental resource management. This calls for serious attention to the updating of educational programs and methodologies.

3. *Ineffectiveness of existing environmental education programs:* as shown by the survey among teachers, environmental education programs are not always up-to-date and lack sufficient practical and research-based tasks. This is corroborated by numerous teacher reviews pointing out the scarcity of case studies and real-life situations, which reduces student interest and limits the effectiveness of the educational process.

To improve the effectiveness of environmental education in Kazakhstan, the following measures should be implemented:

1. Updating educational programs: geography programs should be more focused on developing practical skills and environmental responsibility in students. This includes incorporating more assignments related to solving environmental problems, project development and research work.

2. Teacher professional development: geography teachers should be provided with additional courses and training on modern teaching methods, including project-based and problem-based learning, the use of digital resources and interactive methods.

3. *Implementation of innovative teaching methods:* the active use of methods such as case studies, role-playing and the application of real-world environmental cases should be encouraged, as these help students develop critical thinking and decision-making skills in environmental resource management [7].

4. Development of digital infrastructure: improving access to digital resources and educational platforms will facilitate in-depth study of environmental issues, while enhancing the technical infrastructure of schools to support the use of modern technologies in teaching.

Based on the analysis of educational programs and current teaching methods for environmental education, it can be stated that the existing education system in Kazakhstan requires changes.

2) Survey Results among Students. In this regard, to propose effective measures, the importance of environmental resource management was first determined through a survey conducted among students. The survey of students revealed the following:

• 65% of respondents stated that environmental resource management topics are discussed in geography lessons at least once a month.

• 40% of students noted that traditional lecture-based teaching methods do not allow them to fully understand environmental issues.

• 80% of respondents expressed interest in project work and practical activities related to ecology, such as participating in environmental campaigns and developing environmental protection projects (Table 1) [8].

Table 1 - Survey Results Among Students

Question	Answers
How often are environmental resource management topics discussed in geography lessons?	65% – frequently, 35% – rarely
What teaching methods help you better understand environmental issues?	40% – lectures, 60% – project work
Do you participate in environmental projects and campaigns?	80% – yes, 20% – no
How important is the study of environmental issues in school to you?	85% – very important

3) Results of Interviews with Geography Teachers. Geography teachers in Kazakhstan reported the following:

• 50% of teachers actively use project work and research, although, in their opinion, this approach requires additional resources and time.

• 60% of teachers noted that the use of digital technologies, such as educational platforms and eco-oriented online courses, helps increase students' interest in environmental issues.

• 70% of educators believe that extracurricular activities (such as environmental campaigns and competitions) are an essential component of environmental education.

As part of the study, various pedagogical methods used for teaching environmental resource management in the school geography curriculum were analyzed. Special attention was given to methods that actively contribute to a deeper understanding of the material and the development of environmental literacy among students. Among these methods, project-based learning, case studies and the use of digital educational technologies stand out. The following pedagogical methods are recommended to enhance environmental education:

• *Problem-based learning* – a method that presents students with real environmental issues, encouraging them to seek solutions [9]. In the context of environmental resource management, this could involve topics such as the conservation of water resources, forest ecosystems, or the rational use of energy resources.

• *Case studies* – a method based on analyzing real-life situations that require decision-making and the development of practical measures to address environmental problems [10]. This method allows students to study various types of resource management, their impact on the environment, and potential solutions to ecological issues.

• *Project-based learning* – involves students creating projects related to nature conservation, the study of natural resources, and sustainable development [11]. The importance of this method lies in its ability to foster critical thinking, creative initiative, and teamwork skills among students.

The case study method is an effective tool for active learning and the development of analytical and decision-making skills. In the case of the topic "Types of Environmental Resource Management", real-life examples can be used where students must propose solutions to reduce environmental impact. For instance, a case could be related to a project on the rational use of water resources in Kazakhstan or the protection of forests from deforestation.

An example lesson plan using the case study method on the topic "Types of Environmental Resource Management" is presented in Table 2 [12].

Table 2 - Lesson Plan on "Types of Environmental Resource Management" using the Case Study Method

Time	*Lesson Stage*	*Teacher's Activity*	*Students' Activity*	*Resources/Materials*
5 min	Introduction to the Topic	Explaining the importance of studying types of natural resource use and their impact on the environment.	Listening attentively, asking questions.	Presentation on natural resource use, tables with types of natural resource use.
10 min	Case Study	Presenting a real-life situation (e.g., pollution of water bodies due to irrational use of water resources).	Dividing into groups, discussing the situation, identifying key issues.	Case study resources, data on river and water body pollution in Kazakhstan.

15 min	Development of Solutions	Assisting in organizing group work, where students must propose solutions to the problem.	Developing solutions in groups, using knowledge of different types of natural resource use and sustainable development.	Maps, textbooks, internet resources, articles on sustainable natural resource use.
10 min	Presentation of Solutions	Summarizing group work, presenting solutions.	Presenting their solutions, discussing alternative options.	Projector for presenting solutions, flipchart for recording conclusions.
10 min	Lesson Summary and Reflection	Discussing the results and conclusions, summarizing the lesson.	Answering the teacher's questions, reflecting on the work done.	Table with key conclusions, additional questions for reflection.

1. At the *first stage,* the teacher introduces the students to the topic of the lesson and explains the importance of studying different types of natural resource use, emphasizing their impact on the environment. This stage helps prepare students for further investigation and analysis of real-world situations.

2. At the *second stage,* students are presented with a case study involving a real-world issue, such as river pollution in Kazakhstan caused by inefficient water use. Students are divided into groups to discuss the situation, identifying key problems and cause-and-effect relationships.

3. At the *third stage,* the groups develop possible solutions, for example, by proposing strategies for improving water resource management in line with the principles of sustainable development. Students use educational materials, maps, and internet resources to gather information.

4. At the *fourth stage,* students present their solutions to the class, justifying their choices. The teacher helps summarize the outcomes, discussing the results and alternative approaches.

5. At the *fifth stage,* reflection takes place, where students can express their opinions on how effectively they applied the knowledge gained, as well as consider what alternative solutions might have been possible.

The use of the case study method in geography lessons on the topic "Types of Natural Resource Use" has yielded the following results:

• *Increased engagement:* 85% of surveyed students reported that the case study method significantly increases their interest in geography lessons.

• *Deeper understanding of the topic:* 90% of students noted that case studies help them better understand the practical aspects of rational natural resource use.

• *Development of critical thinking:* 78% of students indicated that while working on the case study, they were able to formulate their thoughts more clearly regarding solutions to environmental problems.

Thus, the use of the case study method in geography lessons contributes to a deeper understanding of the topic of natural resource use, enhances critical thinking and fosters the development of environmental responsibility in students.

Discussion

The data obtained show that issues of natural resource use are addressed in geography lessons; however, only 65% of students report that environmental topics are discussed regularly. Despite this, more than 80% of students express interest in project-based activities and practical sessions related to environmental issues. This highlights the importance of implementing more active teaching methods, such as project work and research projects [13], which contribute to better material retention and the development of environmental responsibility.

The identified problems can be classified as follows:

• *Organizational level*: lack of time within the school curriculum, insufficient administrative support.

• *Methodical level*: insufficient training of teachers in modern methods, lack of ready-to-use methodological materials.

• *Technical level*: limited access to digital resources, unstable internet connection in rural schools.

The results of interviews with teachers show that many of them use methods such as project-based learning and digital resources, but face challenges related to a lack of time and necessary resources. This confirms the conclusions made in several studies, such as the article *"Sustainable Development Education: Problems and Prospects"* (Smirnova, 2019) [14], which indicates that effective implementation of innovative teaching methods requires comprehensive support from educational institutions and the state.

A comparison with the works of other authors allows us to highlight several features of this study. Unlike broader analyses, such as the article *"Environmental Education and Sustainable Development: Theoretical and Practical Aspects"* (Petrova, 2018) [15], which emphasizes the need to integrate environmental knowledge into various disciplines, our study focuses more specifically on the practical methods and approaches directly used in the school geography curriculum. We also consider real data and opinions from teachers and students, which provides a more complete understanding of the current situation.

However, despite the positive results, there are several problems, such as a lack of time and resources to implement active teaching methods, and the absence of comprehensive programs integrating environmental knowledge into other subjects. Additionally, many teachers do not have sufficient training to apply these methods effectively and the use of online platforms is hindered by issues with internet access and technical equipment.

Conclusion

The results of the study confirm the importance of using modern pedagogical methods in teaching environmental management. Project-based research activities contribute to a deeper understanding of environmental issues by students. An important conclusion is that the use of interactive and practical teaching methods significantly increases students' interest in the subject and allows them to assimilate the material more effectively. The effectiveness of pedagogical methods for teaching environmental management in the school

geography curriculum largely depends on the integration of modern educational technologies, such as project-based learning, the use of digital resources and active student involvement in practical activities.

In conclusion, only a comprehensive approach, which includes both theoretical instruction and practical activities, can significantly enhance students' environmental literacy and responsibility. It is important to continue developing and implementing innovative methods and approaches in the educational process to help the younger generation understand the importance of sustainable natural resource management and environmental protection.

The conclusions are directly based on empirical data collected through questionnaires and teacher interviews. The students' preference for practical work and the teachers' emphasis on project-based learning illustrate the alignment between educational needs and innovative teaching approaches.

Future research could explore the effectiveness of these methods across different age groups, analyze regional disparities in the implementation of environmental education, and develop teacher training modules or methodological guides tailored to school geography. A longitudinal study could also be conducted to assess how practical ecological education affects students' environmental behavior over time.

REFERENCES

[1] Тоқаев Қ.-Ж. Қазақстан Республикасының Президентінің Қазақстан халқына Жолдауы. – Астана, 2024. – 15 б.

[2] University of Wisconsin-Stevens Point. Environmental Education Activities for Teacher Educators. – Stevens Point, WI: UWSP, 2018. – 80 p.

[3] Министерство образования и науки Республики Казахстан. Государственный общеобязательный стандарт общего среднего образования Республики Казахстан. Школьное образование. География. – Алматы, 2017. – 120 с.

[4] OECD. Results of the PISA-2022 International Student Assessment: Environmental Education and Sustainable Development. – Paris, 2022. – 350 p.

[5] Жиенбаева Н.Б., Абдигапбарова У.М., Сеитова А.Л. Методическое сопровождение качественного преобразования ресурсных возможностей преподавателя вуза: практические рекомендации // Вестник КазУМОиМЯ им. Абылай хана. Серия «Педагогические науки». – 2023. – Т. 70. – № 3. – С. 19-36.

[6] Министерство образования и науки Республики Казахстан. Исследование по использованию инновационных методов преподавания в школьной географии: отчет по результатам анкетирования учителей. – Алматы, 2020. – 50 с.

[7] Hockings M., Stolton S., Leverington F., etc. Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. – 2nd ed. – Switzerland: IUCN, 2006. – 105 p.

[8] North American Association for Environmental Education. Professional Development of Environmental Educators: Guidelines for Excellence. – Washington, DC: NAAEE, 2019. – 40 p.

[9] Осипова И.Г., Чистякова В.В. Преподавание природопользования в системе школьного образования: история и современные тенденции. – Тула: ТГПУ, 2022. – 300 с.

[10] Barth M. Education for sustainable development: a critical review of its pedagogical foundation. – Berlin: Springer, 2021. – 350 p.

[11] Hwang S. Placing GIS in sustainability education // Journal of Geography in Higher Education. – 2013. – №37(2). – pp. 276-291.

[12] Новикова И.А. Современные методы преподавания природопользования в школе. – Москва, 2021. – 248 с.

[13] AlAli R.M., Al-Barakat A.A. Assessing the effectiveness of environmental approach-based learning in developing science process skills and cognitive achievement in young children // MDPI: Education Sciences. – Switzerland, 2024. – №14(11). – p. 1269.

[14] Смирнова И.П. Образование для устойчивого развития: проблемы и перспективы. – Москва, 2019. – С. 45-56.

[15] Петрова А.В. Экологическое образование и устойчивое развитие: теоретические и практические аспекты. – Санкт-Петербург, 2018. – С. 102-114.

REFERENCES

[1] Toqaev Q.-J. Prezidenttıñ Qazaqstan halqyna Joldauy (State of the Nation Address of the President of the Republic of Kazakhstan.). – Astana, 2024. – 15 p. [in Kaz]

[2] University of Wisconsin-Stevens Point. Environmental Education Activities for Teacher Educators. – Stevens Point, WI: UWSP, 2018. – 80 p.

[3] Ministerstvo obrazovaniya i nauki Respubliki Kazahstan. Gosudarstvennyj standart obshchego obrazovaniya Respubliki Kazahstan. Shkol'noe obrazovanie. Geografiya (State Standard of General Education of the Republic of Kazakhstan. School Education. Geography). – Almaty, 2017. – 120 p. [in Rus]

[4] OECD. Results of the PISA-2022 International Student Assessment: Environmental Education and Sustainable Development. – Paris, 2022. – 350 p.

[5] Zhienbaeva N.B., Abdigapbarova U.M., Seitova A.L. Metodicheskoe obespechenie kachestvennogo preobrazovanija resursnyh sposobnostej prepodavatelja vuza: prakticheskie rekomendacii (Methodological support for the qualitative transformation of the resource abilities of a university teacher: practical recommendations) // Zhurnal «Izvestija KazUMOiMJa imeni Abylaj hana», serija «Pedagogicheskie nauki». – 2023. – Tom 70. – №3. – pp. 19-36. [in Rus]

[6] Ministerstvo obrazovaniya i nauki Respubliki Kazahstan. Issledovanie ispol'zovaniya innovacionnyh metodov obucheniya v prepodavanii geografii: otchet o provedenii oprosa sredi uchitelej (Study on the Use of Innovative Teaching Methods in Geography Instruction: Survey Report Among Teachers). – Almaty, 2020. – 50 p. [in Rus]

[7] Hockings M., Stolton S., Leverington F., Dudley N., Courrau J. Evaluating effectiveness: A framework for assessing management effectiveness of protected areas. – 2nd ed. – Switzerland: IUCN, 2006. – 105 p.

[8] North American Association for Environmental Education. Professional Development of Environmental Educators: Guidelines for Excellence. – Washington, DC: NAAEE, 2019. – 40 p.

[9] Osipova I.G., Chistyakova V.V. Obuchenie prirodopol'zovaniyu v shkol'noj sisteme: istoriya i sovremennye tendencii (Teaching Natural Resource Management in the School System: History and Modern Trends). – Tula: TGPU, 2022. – 300 p. [in Rus]

[10]Barth M. Education for sustainable development: a critical review of its pedagogical foundation. – Berlin: Springer, 2021. – 350 p.

[11]Hwang S. Placing GIS in sustainability education // Journal of Geography in Higher Educatio. – 2013. – №37(2). – pp. 276-291.

[12]Novikova I.A. Sovremennye metody prepodavaniya prirodopol'zovaniya v shkole (Modern Methods of Teaching Natural Resource Management in Schools). – Moskva: Vysshaya shkola, 2021. – 248 p. [in Rus]

[13]AlAli R.M., Al-Barakat A.A. Assessing the effectiveness of environmental approach-based learning in developing science process skills and cognitive achievement in young children // MDPI: Education Sciences. – Switzerland, 2024. – №14(11). – p. 1269.

[14]Smirnova I.P. Obuchenie ustojchivomu razvitiyu: problemy i perspektivy (Education for Sustainable Development: Problems and Prospects). – Moskva: Izdatel'stvo «Ekologiya», 2019. – pp. 45-56. [in Rus]

[15]Petrova A.V. Ekologicheskoe vospitanie i ustojchivoe razvitie: teoreticheskie i prakticheskie aspekty (Environmental Education and Sustainable Development: Theoretical and Practical Aspects). – Sankt-Peterburg, 2018. – pp. 102-114. [in Rus]

ТАБИҒАТТЫ ПАЙДАЛАНУДЫ ОҚЫТУДА ҚОЛДАНЫЛАТЫН ПЕДАГОГИКАЛЫҚ ӘДІСТЕРДІҢ ТИІМДІЛІГІН БАҒАЛАУ

*Абдрахимова Ә.О.[1], Боранкулова Д.М.[2]
*[1,2]Абай атындағы Қазақ ұлттық педагогикалық университеті,
Алматы, Қазақстан

Аңдатпа. Бұл мақалада мектептегі география пәні аясында табиғатты пайдалануды оқытуда қолданылатын педагогикалық әдістердің

оқушылар үшін тиімділігін анықтау қарастырылады. Себебі, қазіргі таңда оқушылардың экологиялық санасын және қоршаған ортаға жауапкершілікпен қарауын қалыптастыруға ерекше назар аударылады. Қазіргі қоғам көптеген экологиялық қиындықтарға тап болуда, бұл табиғи ресурстарды ұтымды пайдалануға және Тұрақты дамуды қолдауға қабілетті экологиялық сауатты ұрпақты қалыптастыруды талап етеді. Зерттеудің мақсаты – оқушылардың табиғатты пайдалану және олардың экологиялық санасын қалыптастыру туралы білім деңгейін арттыруға ықпал ететін ең тиімді әдістемелік тәсілдер мен педагогикалық технологияларды анықтау. Зерттеу аясында мектеп географиясында табиғатты пайдалануды оқытудың қолданыстағы білім беру әдістемелері талданды. Оқушыларға сауалнамалар мен тестілеу, сондай-ақ география мұғалімдерімен осы тақырып бойынша пікірлері мен тәжірибелерін анықтау үшін сұхбат жүргізілді. Оқытудың интерактивті әдістерін қолдану, жобалау және зерттеу жұмыстарын енгізу және білім беру процесінде сыныптан тыс жұмыстардың рөлі сияқты аспектілерге назар аударылды. Зерттеу нәтижелері проблемалық оқыту, кейс-стади сияқты заманауи педагогикалық технологияларды қолдану және цифрлық білім беру ресурстарын пайдалану оқушылардың табиғатты пайдалануды зерттеуге деген қызығушылығын айтарлықтай арттыратынын және материалды тереңірек игеруге ықпал ететінін көрсетті. Сонымен қатар, мектеп оқушыларын экологиялық жобалар мен акциялармен байланысты практикалық іс-шараларға тарту олардың тұрақты экологиялық санасы мен қоршаған ортаға жауапкершілігін қалыптастыруға көмектеседі. Алынған мәліметтер негізінде педагогтарға табиғатты пайдалануды оқыту әдістемелерін жақсарту бойынша ұсыныстар әзірленді. Қорытындылай келе, экологиялық сауатты азаматтарды оқыту мен тәрбиелеудің максималды тиімділігіне қол жеткізу үшін теориялық білімді де, практикалық қызметті де қамтитын экологиялық білімге кешенді көзқарастың маңыздылығы атап өтіледі.

Тірек сөздер: педагогикалық әдістер, оқытудағы инновациялық тәсілдер, оқытудың тиімділігін бағалау, оқу бағдарламаларын әзірлеу, сандық білім беру ресурстары, экологиялық білім беру, экологиялық сауаттылық, табиғатты тұрақты пайдалану

ОЦЕНКА ЭФФЕКТИВНОСТИ ПЕДАГОГИЧЕСКИХ МЕТОДОВ ОБУЧЕНИЯ ПРИРОДОПОЛЬЗОВАНИЮ

*Абдрахимова А.О.[1], Боранкулова Д.М.[2]
*[1,2]Казахский национальный педагогический университет имени Абая, Алматы, Казахстан

Аннотация. В данной статье рассматривается проблема оценки эффективности обучения педагогических методов обучения природопользованию в курсе географии для школьников. Современное общество сталкивается с многочисленными экологическими вызовами, что требует формирования экологически грамотного поколения, способного

рационально использовать природные ресурсы и поддерживать устойчивое развитие. Цель исследования – выявить наиболее эффективные методические подходы и педагогические технологии, способствующие повышению уровня знаний учащихся о природопользовании и формированию их экологического сознания. В рамках исследования были проанализированы существующие образовательные программы и методики преподавания природопользованию в школьной географии. Были проведены опросы и тестирования учащихся, а также интервью с учителями географии для выявления их мнений и опыта по данной теме. Основное внимание уделялось таким аспектам, как использование интерактивных методов обучения, внедрение проектных и исследовательских работ, роль внеклассных мероприятий в образовательном процессе. Результаты исследования показали, что применение современных педагогических технологий, таких как проблемное обучение, кейс-стади, и использование цифровых образовательных ресурсов, значительно повышает интерес учащихся к изучению природопользования и способствует более глубокому усвоению материала. Кроме того, вовлечение школьников в практическую деятельность, связанную с экологическими проектами и акциями, помогает сформировать у них устойчивое экологическое сознание и ответственность за окружающую среду. На основании полученных данных разработаны рекомендации для педагогов по улучшению методик обучения природопользованию. В заключение подчеркивается важность комплексного подхода к экологическому образованию, включающего как теоретические знания, так и практическую деятельность, для достижения максимальной эффективности обучения и воспитания экологически грамотных граждан.

Ключевые слова: педагогические методы, инновационные подходы в обучении, оценка эффективности обучения, разработка учебных программ, цифровые образовательные ресурсы, экологическое образование, экологическая грамотность, устойчивое природопользование

Information about authors:

Abdrakhimova Aigerim Orynbasarkyzy – 3rd year PhD-Doctoral Student, Abai Kazakh National Pedagogical University, aigerim0909@bk.ru

Borankulova Dina Melsovna – Candidate of Geographical Sciences, senior lecturer Department of Geography and Ecology, Abai Kazakh National Pedagogical University, dinaborankulova@mail.ru

Авторлар туралы мәлімет:

Абдрахимова Әйгерім Орынбасарқызы – 3 курс PhD-докторанты, Абай атындағы Қазақ ұлттық педагогикалық университеті, aigerim0909@bk.ru

Боранкулова Дина Мельсқызы – география ғылымдарының кандидаты, География және экология кафедрасының аға оқытушысы, Абай атындағы Қазақ ұлттық педагогикалық университеті, dinaborankulova@mail.ru

Сведения об авторах:

Абдрахимова Айгерим Орынбасаркызы – PhD-докторант 3 курса, Казахский национальный педагогический университет имени Абая, aigerim0909@bk.ru

Боранкулова Дина Мельсовна – кандидат географических наук, старший преподаватель кафедры Географии и экологии, Казахский национальный педагогический университет имени Абая, dinaborankulova@mail.ru

Received: *December 13, 2024*