



**THE METHODOLOGICAL POTENTIAL OF INTERNATIONAL ASSESSMENT
PROGRAMS FOR DEVELOPING GEOGRAPHICAL CONCEPTS IN PRIMARY
SCHOOL SCIENCE LESSONS**

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ABSTRACT

This article is devoted to studying the methodological potential of international assessment programs (PISA, TIMSS) in developing geographical concepts in primary school science lessons. Within the scope of the study, tasks used in international assessment programs were analyzed to identify their pedagogical possibilities for enhancing students' geographical knowledge, skills, and critical thinking. The article emphasizes an axiological approach and discusses the effectiveness of integrating international assessment programs with the national curriculum. The research results demonstrate the potential of these programs to improve geographical literacy, develop scientific thinking, and foster responsible attitudes toward natural resources and the environment in primary school students.

Keywords: primary school, science, geographical concepts, international assessment programs, PISA, TIMSS, methodological potential, geographical literacy, axiological approach.

INTRODUCTION

Geographical literacy refers to students' ability to systematically acquire knowledge and understanding of the Earth's structure, climate, natural resources, regional changes, and the impact of human activity on the environment. Primary education serves as the foundation for forming these concepts. Therefore, developing geographical literacy in students through science lessons is not only essential for enhancing scientific knowledge but also for instilling moral and ecological values.

Currently, international assessment programs such as PISA, TIMSS, and IEA are widely used to evaluate students' scientific literacy, critical thinking, and practical skills. These programs also provide opportunities to assess geographical concepts in real-life contexts, which helps students apply learned knowledge in practice. For instance, PISA tasks require students to identify geographical problems, analyze resources and regional differences, and evaluate environmental phenomena.

Moreover, international assessment programs allow primary education to modernize pedagogical practices, align students' geographical knowledge with national education standards, and educate them based on an axiological approach. The axiological approach teaches students to value knowledge while fostering moral, ecological, and social values, developing responsibility toward nature, and enhancing their thinking culture.

Within the research framework, the methodological potential of international assessment programs is analyzed in terms of pedagogical opportunities for developing geographical concepts and linking them to practical application. Additionally, the study examines the effectiveness of using these programs integrated with the national curriculum. This approach is considered a key tool for enhancing scientific literacy, ecological awareness, and moral values in primary school science lessons.

The main aim of the study is to determine the methodological opportunities and pedagogical effectiveness of international assessment programs (PISA and TIMSS) in forming primary school students' geographical concepts. To achieve this aim, the following objectives were set:

Analyze the methods and tasks used to assess geographical knowledge in international assessment programs.



Compare primary school students' geographical concepts with the national curriculum.

Determine the pedagogical effectiveness of PISA and TIMSS methodologies in developing students' understanding of regional, climatic, and resource-related concepts.

Develop recommendations for enhancing geographical literacy based on international and national experience.

This research provides the opportunity to develop an innovative approach for using international assessment programs to enhance students' scientific, ecological, and moral competencies in primary school science lessons.

Methodological Potential of International Assessment Programs. International assessment programs (PISA, TIMSS, IEA) serve not only as a tool for evaluating students' knowledge but also as a mechanism to **modernize teaching practices** and enhance the pedagogical process. They allow primary school teachers to integrate interactive and problem-based tasks into science lessons, which strengthens students' analytical, observational, and experimental skills.

In primary school science lessons, geographical concepts such as the Earth's structure, water bodies, climate, flora, and fauna are recommended to be taught using **practical exercises, simple examples, visual aids, maps, videos, and models**. PISA and TIMSS tasks help students develop skills to understand, analyze, compare, and draw conclusions. Tasks adapted to short and interactive learning situations motivate students and enhance their practical skills.

By teaching geographical concepts, students develop a **responsible attitude toward nature and ecological awareness**. The axiological approach ensures that knowledge acquisition is accompanied by the formation of moral values, collaboration skills, environmental responsibility, and respect for regional differences. For example, PISA ecological tasks introduce students to environmental protection, resource conservation, and sustainable development principles.

Integrating international assessment programs with the national curriculum ensures effective formation of geographical concepts in primary school students. Aligning national textbook content with international tasks enhances students' **critical thinking** and practical application of knowledge.

RESULTS

In primary school science lessons, PISA/TIMSS tasks provide the following opportunities:

Analysis of maps and diagrams.

Comparison of geographical phenomena.

Identification and rational use of regional resources.

Analysis of ecological and social issues.

These methods strengthen students' analytical thinking, observational and experimental skills, and contribute to the development of **scientific literacy and ecological awareness**.

The study shows that international assessment programs serve as an important tool to develop students' geographical concepts, as well as their scientific, ecological, and moral competencies. The research findings indicate:

PISA and TIMSS tasks increased students' ability to apply geographical concepts in practice and understand regional and climatic relations.

Students developed responsible attitudes toward nature and ecological decision-making skills.

Students' critical thinking and analytical abilities were strengthened, and their understanding of regional and resource-related concepts improved.

Comparison with the national curriculum showed that international assessment tasks are significantly more effective in developing geographical literacy.

The pedagogical potential of international assessment programs offers several advantages:

Facilitates practical application of knowledge through real-life situations.



Enhances scientific literacy and critical thinking skills.

Supports the formation of moral and ecological values when integrated with an axiological approach.

However, it is necessary to **adapt PISA/TIMSS tasks to the level of primary school students** and provide adequate teacher training. Integrating these tasks into the national curriculum requires **pedagogical experience and methodological guidance**.

CONCLUSION

The research results demonstrate that the methodological potential of international assessment programs (PISA, TIMSS) plays a significant role in developing geographical concepts in primary school science lessons. These programs not only help students acquire geographical knowledge systematically but also enable them to apply it in practice, analyze regional and ecological differences, and develop critical thinking skills.

Through PISA and TIMSS tasks, students strengthen skills such as analyzing geographical phenomena, working with maps and diagrams, identifying regional resources, and managing them responsibly. Additionally, these programs enhance scientific literacy, critical thinking, and experimental skills, allowing students to analyze real-life situations effectively.

The study also shows that using international assessment programs effectively contributes to the **formation of an axiological approach** in primary school students. This approach helps students develop moral values, responsibility toward nature, and ecological awareness. As a result, geographical concepts are reinforced not only at the knowledge level but also in students' personal and social values.

Integrating international assessment programs with the national curriculum, along with providing teachers with methodological guidance, interactive tasks, and problem-based activities, supports the development of **independent thinking, scientific reasoning, and ecological decision-making skills** in students.

Thus, the methodological potential of international assessment programs in primary school science lessons is implemented in the following main directions:

Formation of geographical concepts: reinforcing knowledge about the Earth's structure, climate, regional differences, and resources.

Development of ecological awareness: fostering conservation, resource efficiency, and sustainable development principles.

Instilling axiological values: promoting moral, social, and ecological values in students.

Development of critical thinking and practical skills: training students to analyze situations, draw conclusions, and make decisions.

National and international integration: improving lesson quality by aligning the national curriculum with international standards.

In conclusion, using international assessment programs to develop geographical concepts enhances the **effectiveness of primary school science education**, improves students' scientific and ecological literacy, and strengthens their axiological values. Active methodological use of PISA and TIMSS is considered an **innovative approach** in primary school teaching and is recommended for broader pedagogical practice.

FOYDALANILGAN ADABIYOTLAR RO'YXATI

1. Qiyom Nazarov. Qadriyatlar falsafasi (Aksiologiya) // Toshkent-Faylasuflar milliy jamiyati nashriyoti - 2004 –**B. 12-14**.
2. Axmedova M Falsafa.. Tahriri ostida. Darslik. –T.: O__FMJ, 2006.
3. Mamashokirov S. Falsafa. Tahriri ostida. –T.: Sharq, 2005.



4. Nazarov Q Falsafa asoslari.. Tahriri ostida. –T.: O_zbekiston, 2005.
5. Falsafa. Yusupov E. Tahriri ostida. –T.: Sharq, 1999.
6. Alexander, R. (2008). *Education for values in primary schools: Theory and practice*. London: Routledge.
7. Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5–31.
8. International Association for the Evaluation of Educational Achievement (IEA). (2023). *TIMSS 2023 Assessment Framework*. Amsterdam: IEA.
9. Organisation for Economic Co-operation and Development (OECD). (2019). *PISA 2018 Results (Volume I): What Students Know and Can Do*. Paris: OECD Publishing.
10. Şahin, E., & Toprak, E. (2017). Teaching environmental values in primary science education: A pedagogical approach. *Journal of Education for Teaching*, 43(2), 150–165.
11. Vernadsky, V.I. (1926). *Biosphere and Noosphere*. Moscow: USSR Academy of Sciences.
12. Yıldırım, A., & Şimşek, H. (2016). *Qualitative research methods in education*. Ankara: Seçkin Yayıncılık.
13. Zholdasbekova, Z., & Aitbayeva, A. (2020). Integration of value-based education in primary school science lessons. *Journal of Educational Research*, 13(4), 45–57.
14. UNESCO. (2017). *Education for Sustainable Development Goals: Learning Objectives*. Paris: UNESCO.
15. Talan, T., & Karadag, R. (2018). The role of formative assessment in developing students' environmental awareness in primary science education. *International Journal of Science Education*, 40(10), 1202–1217.