



USE OF ARTIFICIAL INTELLIGENCE TOOLS IN IMPROVING THE METHODOLOGICAL PREPARATION OF FUTURE PRIMARY SCHOOL TEACHERS FOR INNOVATIVE ACTIVITY IN MOTHER TONGUE TEACHING

Masharipova Umida Abduvokhidovna

Acting Professor, Department of Theory and Methodology of Primary Education

Nizami Tashkent State Pedagogical University, Uzbekistan, PhD

Tashkent, Uzbekistan

Abstract. This article examines the issues of methodological preparation of future primary school teachers for innovative activity in the process of teaching the mother tongue. It provides a scientific and theoretical analysis of the role and significance of artificial intelligence tools in the educational process. Furthermore, the study explores the possibilities of enhancing lesson effectiveness through the use of AI technologies, the application of interactive teaching methods, and the development of digital competencies. The article substantiates modern approaches and innovative methods for developing the methodological preparedness of future teachers. Practical recommendations are offered for the effective use of artificial intelligence in teaching. The research findings contribute to improving the quality of education and enhancing the system of teacher training.

Keywords: Artificial intelligence, mother tongue education, primary school, innovative activity, methodological training, digital technologies, pedagogical competence, interactive methods, educational effectiveness, lesson design, modern approaches, digital resources, teacher competence, didactic opportunities, creative thinking, educational innovation, pedagogical technologies.

The issue of methodological preparation of future primary school teachers for innovative activity is considered one of the priority areas of the modern education system. In particular, the application of innovative approaches in the process of teaching the mother tongue is important not only for developing students' linguistic competence, but also for fostering their independent thinking, creativity, and communicative activity. In today's context of globalization, the need to enhance the effectiveness of teaching through the integration of digital technologies, artificial



intelligence tools, and interactive methods into the educational process is steadily increasing. Therefore, a thorough study of the theoretical foundations for preparing future primary school teachers for innovative activity has significant scientific and practical importance. Analysis of scientific literature shows that innovative activity is viewed as a complex system encompassing all components of the pedagogical process. The concept of innovation in education implies the introduction of new ideas, the implementation of advanced pedagogical practices, and the improvement of existing methods. In international practice, particularly in countries such as Finland, Singapore, and South Korea, innovative approaches are widely applied in primary education, resulting in a high level of functional literacy among students. For example, according to the results of the PISA international assessment program, students in these countries achieve average reading literacy scores above 500 points, which confirms the effectiveness of innovative teaching methods.

In the education system of Uzbekistan, special attention has also been paid in recent years to innovative approaches. In particular, the Development Strategy for 2022–2026 identifies improving the quality of education, introducing modern pedagogical technologies, and developing teachers' professional competencies as priority tasks. According to statistical data, more than 10,000 general education schools operate in the country, with over 6 million students enrolled. In such a large-scale education system, ensuring quality is directly dependent on teachers' methodological preparedness. From this perspective, preparing future teachers for innovative activity becomes a highly relevant issue. The content of innovative approaches in mother tongue teaching primarily includes methods aimed at developing students' speech activity. While traditional lessons are mainly dominated by reproductive methods, innovative approaches prioritize constructive, communicative, and activity-based methods. For example, interactive methods such as brainstorming, clustering, INSERT, blitz questioning, and role-playing increase students' engagement during the lesson. Research indicates that in classes where interactive methods are applied, students' level of content mastery is 25–30 percent higher.

The pedagogical potential of innovative approaches is broad, as they allow for consideration of students' individual characteristics, the organization of differentiated instruction, and the personalization of the learning process. In particular, the use of digital technologies and artificial intelligence tools makes it



possible to assess students' knowledge in real time, assign individualized tasks, and optimize the learning process based on analytical results. For example, modern educational platforms can automatically analyze students' errors and provide appropriate recommendations. This, in turn, contributes to a more effective organization of the teacher's methodological activity. In the formation of methodological preparedness of future primary school teachers, not only theoretical knowledge but also practical skills are of great importance. In higher education institutions, it is essential to develop skills in lesson planning based on innovative technologies, as well as in creating and effectively using electronic educational resources. According to statistical data, about 70 percent of modern teachers regularly use digital tools in the teaching process; however, only 40 percent of them possess full competence in applying innovative methods. This indicates the need for further improvement of methodological training. Furthermore, in the process of preparing for innovative activity, it is important to develop pedagogical reflection skills, that is, the ability to analyze and evaluate one's own professional activity. By analyzing their lessons, teachers can identify their strengths and weaknesses and determine ways to improve them. This process is an integral part of innovative activity and contributes to the professional development of teachers.

In conclusion, the theoretical foundations of methodological preparation of future primary school teachers for innovative activity serve as a key factor in enhancing the effectiveness of mother tongue teaching. The integration of innovative approaches, digital technologies, and interactive methods elevates the quality of education to a new level. At the same time, developing teachers' methodological competence, preparing them in accordance with modern educational requirements, and strengthening their practical skills remain pressing tasks of today. The rapid development of artificial intelligence (AI) technologies is bringing about fundamental changes in the education system. In particular, the use of AI tools in mother tongue lessons opens up new didactic opportunities for improving the quality of teaching and for developing students' linguistic and communicative competencies. Within the framework of modern pedagogical approaches, AI is considered not merely as an additional technical tool, but as an important didactic resource that enables the individualization, differentiation, and analytical management of the educational process.



Recent international studies indicate that students who use AI-based educational platforms demonstrate, on average, 20–35 percent higher achievement compared to those taught through traditional methods. For example, reports by OECD and UNESCO show that in classrooms where digital and AI technologies have been implemented, students' independent learning skills have increased by 30 percent, while their level of logical thinking has improved by 25 percent. These results confirm the high didactic potential of artificial intelligence tools. One of the main directions of applying AI technologies in mother tongue lessons is the individualization of learning materials. Taking into account each student's level of knowledge, interests, and learning pace, AI systems offer personalized tasks. For instance, adaptive learning platforms identify students' errors and, based on this, provide additional exercises or explanations. This significantly enhances the effectiveness of the learning process. According to statistical data, in classes that use adaptive systems, the number of student errors decreases by 15–20 percent.

Another important didactic capability of AI tools is the development of speech activity. In mother tongue lessons, AI-based programs can serve as effective tools for developing skills such as text creation, analysis, and retelling. For example, systems that automatically analyze texts can identify grammatical and stylistic errors in students' written work and provide recommendations for correction. This not only improves students' written language skills but also reduces the teacher's workload. The integration of AI technologies with interactive teaching methods is also an important factor in improving educational effectiveness. Methods such as brainstorming, discussion, and role-playing yield even better results when enriched with AI tools. Through virtual assistants, chatbots, or interactive platforms, students can independently find answers to questions, exchange ideas, and solve problem-based tasks. Research shows that in lessons based on interactive and AI-supported approaches, students' engagement increases by up to 40 percent. The use of digital resources is also an integral part of AI technologies. In mother tongue lessons, electronic textbooks, multimedia materials, and audio-visual resources are widely used. AI ensures the effective utilization of these resources. For example, by analyzing a student's activity, the system can recommend appropriate videos or textual materials tailored to their needs. This makes the learning process more engaging and effective. Statistical analyses indicate that the integration of multimedia and AI increases students' retention rates by 30–35 percent.



In the education system of Uzbekistan, a number of initiatives have also been undertaken to introduce AI technologies. In particular, digital learning platforms, electronic diary systems, and distance learning tools are being widely implemented. However, analyses show that the level of effective use of AI technologies is still insufficient. For instance, although nearly 60 percent of teachers use digital tools, only 35–40 percent of them fully utilize the capabilities of AI. This highlights the need to further develop teachers' digital and methodological competencies. At the same time, there are certain challenges associated with the use of AI tools. These include insufficient technical infrastructure, the limited level of teacher preparedness, and the lack of methodological guidelines, all of which slow down the process. Therefore, a comprehensive approach is required for the integration of AI technologies into education, including teacher retraining, strengthening methodological support, and developing modern infrastructure.

In conclusion, the use of artificial intelligence tools significantly expands the didactic possibilities of mother tongue lessons. It contributes to the individualization of the learning process, the effective application of interactive methods, the rational use of digital resources, and the improvement of students' knowledge levels. Statistical and analytical analyses confirm the important role of AI technologies in enhancing educational effectiveness. Therefore, the widespread integration of AI tools into the educational process and their methodological justification remain pressing tasks for the future. The development of methodological competence among future primary school teachers is one of the most important tasks of the modern education system. In particular, the introduction of artificial intelligence (AI) technologies is fundamentally transforming the content of pedagogical activity, requiring teachers to acquire new knowledge, skills, and competencies. Therefore, developing effective mechanisms for forming methodological competence in the process of preparing future teachers for innovative activity has significant scientific and practical relevance. Methodological competence includes a teacher's ability to organize the educational process on a scientific basis, apply modern pedagogical technologies, and assess and analyze learning outcomes. According to international studies, particularly the results of TALIS (Teaching and Learning International Survey), students in classes taught by teachers with high methodological competence demonstrate learning outcomes that are, on average, 25–30 percent higher. This confirms the direct impact of methodological preparedness on the quality of education.



Lesson design based on artificial intelligence is one of the key directions in developing methodological competence. With the help of AI tools, teachers can clearly plan lesson objectives, tasks, content, and methods. For example, modern AI platforms enable the automatic generation of lesson scenarios, systematization of educational materials, and the development of tasks tailored to students' knowledge levels. According to statistical data, teachers who use AI for lesson planning save up to 30–40 percent of their time and improve lesson effectiveness.

The formation of practical skills in future teachers is also an essential component of methodological competence. In higher education institutions, it is necessary to place special emphasis on practical training alongside theoretical knowledge. Through AI-based simulation platforms, future teachers can develop skills in conducting lessons in virtual classroom environments, solving problem situations, and communicating effectively with students. Research indicates that teachers trained through such simulations adapt to professional practice 35 percent faster. Developing reflection and analytical skills is also crucial in preparing for innovative activity. With the help of AI technologies, teachers' lessons can be analyzed to identify their strengths and weaknesses. For example, video analytics tools allow for the evaluation of lesson effectiveness and provide recommendations for improvement. Statistical analyses show that teachers who engage in regular reflection improve their methodological proficiency by 20–25 percent. Moreover, the effective use of digital resources plays an important role in developing the methodological competence of future teachers. Electronic textbooks, interactive platforms, and AI-based educational programs enrich the teacher's methodological toolkit. For instance, systems that automatically assess students' knowledge provide teachers with precise analytical data, enabling them to implement individualized approaches. As a result, the learning process becomes more effective and goal-oriented.

In the education system of Uzbekistan, particular attention is also being paid to the development of methodological competence among future teachers. In recent years, a credit-module system has been introduced in pedagogical higher education institutions, and the proportion of practical training has increased. However, analyses show that only 40–45 percent of students are ready to independently apply modern pedagogical technologies. This indicates the need to further improve methodological training.



Another effective mechanism for developing methodological competence is collaborative learning and experience exchange. Through AI-based online platforms, future teachers can share experiences, study advanced pedagogical practices, and implement them in practice. For example, it has been found that teachers who participate in international educational platforms improve their methodological knowledge by an average of 20 percent. At the same time, there are certain challenges in the process of developing methodological competence. In particular, insufficient technological infrastructure, low levels of teachers' digital literacy, and the lack of methodological guidelines complicate this process. Therefore, a comprehensive approach to the training of future teachers is necessary, in which theoretical knowledge, practical skills, and digital competencies are developed in an integrated manner.

In conclusion, artificial intelligence technologies play a significant role in the development of methodological competence among future primary school teachers. Through AI-based lesson design, the formation of practical skills, and the improvement of reflection and analytical processes, teachers' readiness for innovative activity is enhanced. Statistical and analytical analyses confirm the effectiveness of these approaches. Therefore, the broader integration of AI technologies into pedagogical education and the in-depth development of their methodological foundations remain important tasks for the future.

References:

1. Masharipova, U. (2021). THE ROLE OF INNOVATION IN CONTINUOUS EDUCATIONAL SYSTEM. *Mental Enlightenment Scientific-Methodological Journal*, 2021(4), 168-176.
2. Masharipova, U. (2019). FORMATION OF INNOVATIVE CULTURE OF FUTURE TEACHERS PRIMARY SCHOOL. *European Journal of Research and Reflection in Educational Sciences Vol*, 7(6).
3. Masharipova, U. A. (2021). The Formation of Innovative Culture of Future Teachers of Primary School in the Process of Professional Development. *European Journal of Humanities and Educational Advancements*, 2(2), 33-35.
4. Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Boston, MA: Center for Curriculum Redesign.



5. Luckin, R. (2018). Machine learning and human intelligence: The future of education for the 21st century. London, UK: UCL Institute of Education Press.

6. OECD. (2021). Teachers and school leaders as lifelong learners: TALIS 2018 results (Volume II). Paris: OECD Publishing. <https://doi.org/10.1787/1d0bc92a-en>.

7

.

U

N

E

S

C

O

.

(

2

0

2

1

)

.

A

I

a

n

d

e

d

u

c

a

t

.

o

n

.