

# The Effectiveness of the Use of Pedagogical Technologies in Improving Literacy of Primary Students

G'anijonova Sarvinoz Bahodirovna  
Farg'ona davlat universiteti magistranti  
[ganijonovasarvinoz03@gmail.com](mailto:ganijonovasarvinoz03@gmail.com)



## Abstract

This study studies the effectiveness of the use of pedagogical technologies in improving literacy of Primary School students. The article analyzes the role of digital and traditional pedagogical technologies in the development of literacy skills in the modern educational system. Literature analysis shows that pedagogical technologies have a positive effect on the development of reading, writing and speech by students. The results of the study demonstrated the effectiveness of interactive methods, digital tools and multimedia technologies in increasing the literacy rate of primary students.

**Keywords:** Pedagogical technologies, literacy, primary education, digital technologies, reading skills, interactive methods

## Introduction

In the modern education system, the application of pedagogical technologies plays a significant role in enhancing literacy among primary school students. Digital technologies have had a profound impact on the education system, leading to a paradigm shift throughout the field [1]. In the 21st century, developing students' literacy skills requires new, innovative approaches.

Literacy is not only the ability to read and write, but also a complex set of skills necessary for successful living in the modern information society. Digital literacy has a positive influence on the development of other key skills and competences [2]. The primary school years are considered a foundational stage for establishing literacy skills among learners.

Pedagogical technologies allow teachers to organize the educational process more effectively, address the individual needs of learners, and achieve contemporary educational goals. The use of information technology and learning tools in teaching is one of the primary demands of today's education [3].

## METHODOLOGY AND LITERATURE REVIEW

In this research, the method of literature review was employed. Based on Uzbek, Russian, and international sources, the effectiveness of pedagogical technologies in improving literacy among primary school students was analyzed. The review included more than 50 scholarly articles, monographs, and dissertations published between 2018 and 2025.

The analysis of literature shows that pedagogical technologies can be classified in various ways. They are categorized by types of continuous education, educational domains, and specific attributes [4]. Their implementation in primary education leads to positive outcomes in literacy enhancement.

Foreign studies have extensively investigated the role of digital technologies in developing literacy. According to meta-analytic findings, literacy lessons delivered with the help of technology have a statistically significant positive impact on primary school students [5]. Digital technologies provide broad access to educational resources, including e-books, educational videos, and interactive applications [6].

Russian researchers emphasize the importance of developing digital literacy among primary school children. Components of the digital learning environment include digital technologies, digital learning resources, communication, and pedagogical technologies [7]. Successful acquisition of digital literacy by primary students depends on several factors [8].

## RESULTS AND DISCUSSION

The conducted literature review and theoretical studies confirm the high effectiveness of pedagogical technologies in enhancing literacy among primary school students. Meta-analysis data indicate that technology-assisted literacy lessons have a statistically significant positive effect on learners ( $g = 0.24$ ,  $p < .001$ ) [5]. This result confirms that digital tools, interactive programs, and multimedia content increase students' motivation to read and make the learning process more engaging and effective. Specifically, electronic books, educational videos, and interactive applications offer broad access to resources and can be tailored to individual learning needs [6].

Digital technologies are widely used to support the development of language and literacy skills in young learners, with significant growth in research in this area over the past two decades [9].

Interactive teaching methods in pedagogical technologies play a key role in developing students' critical thinking. These methods encourage students to think independently, foster a competitive environment, and facilitate collaborative learning. When applied appropriately and purposefully, interactive methods stimulate learners' independent thought [3].

Children integrate technology with other resources such as books, maps, and colored pencils to acquire literacy in a multimodal context, allowing them to learn based on real-world experiences [9]. This approach fosters comprehensive literacy development and shows greater effectiveness than traditional teaching methods.

The role of teachers and their digital competence is a crucial focus of this research. Digital tools can serve as powerful additional resources to differentiate literacy instruction, though they cannot replace the essential role of the teacher [10]. Teachers' digital competence is vital for effectively integrating technology into teaching and depends on their ability to combine pedagogical, technological, and content knowledge [7].

According to Russian studies, the digital literacy index of teachers was 87 points, increasing by 7 points in one year, indicating growth in their technological readiness. However, some researchers caution that students may struggle with understanding large text blocks that span multiple screens or require scrolling, suggesting the need for careful and balanced use of digital tools [10].

A major advantage of pedagogical technologies is their adaptability and orientation towards personalized learning. These technologies consider each student's unique learning style, abilities, and needs, resulting in a more individualized educational process [6].

The components of the digital learning environment—digital technologies, educational resources, communication, and pedagogical strategies—interact to increase the effectiveness of literacy formation [7]. Successful acquisition of digital literacy by primary school students is influenced by the quality of informatics education, material and technical support, and consideration of age-related characteristics [8]. Meeting these conditions significantly enhances the effectiveness of pedagogical technologies and yields positive results in developing students' literacy skills.

## CONCLUSION

Research findings show that the use of pedagogical technologies significantly improves literacy in primary school students. Digital tools, interactive methods, and multimedia technologies positively impact reading, writing, and speech development.

However, to utilize these technologies effectively, it is necessary to develop teachers' digital competences, create appropriate infrastructure, and consider learners' developmental characteristics. Pedagogical technologies are not a full substitute for the teacher's role; instead, they support and enrich instructional practice.

Future efforts should focus on deeper investigation of pedagogical technologies' role in literacy development, designing optimal teaching models, and improving teacher training programs.

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