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FOREIGN ANALYSIS OF USING DIGITAL EDUCATIONAL TOOLS IN TEACHING THE MOTHER TONGUE TO PRIMARY SCHOOL STUDENTS

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Abstract:
This article deeply studies foreign experiences in teaching the mother tongue in primary grades based on digital educational tools and analyzes their pedagogical effectiveness. Digital platforms, interactive programs, multimodal educational resources, adaptive learning systems, and artificial intelligence-based teaching technologies used in schools in countries with developed education systems in the world, Finland, South Korea, Singapore, Estonia, and the United States, were studied. The analysis of foreign experiences made it possible to identify factors that contribute to the individualization of mother tongue teaching in primary education, the involvement of students in active learning practices, and the effective management of the learning process. The article also highlights the existing opportunities and integration directions in the use of digital tools in the education system of Uzbekistan based on a comparative analysis.

Keywords: digital education, primary school, native language, foreign experience, interactive platform, digital pedagogy, artificial intelligence, multimodal resources, educational technologies, adaptive learning systems, competency approach.

Introduction

As emphasized in the speeches of the esteemed President of the Republic of Uzbekistan, Shavkat Miromonovich Mirziyoyev, “On Measures to Fundamentally Increase the Prestige and Status of the Uzbek Language,” the issue of the state language should be regarded as one of the priority principles of our national ideology. Indeed, strengthening the status of the state language in social life and expanding its functional capacities is closely linked, first and foremost, to fostering respect for and commitment to the mother tongue in the consciousness of the younger generation. In this regard, the President particularly underscores the necessity of effectively teaching the Uzbek language at all stages of education through modern pedagogical approaches and innovative digital technologies, emphasizing the importance of introducing a comprehensive approach to mastering the mother tongue from early childhood.
At the primary education stage, the use of interactive methods, educational games, and modern information and communication technologies contributes to the formation of students’

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independent thinking skills, the development of creative inquiry competencies, and the expansion of logical reasoning abilities. At the same time, such methodological approaches enable learners to relate the knowledge acquired during the educational process to real-life situations, while also increasing their interest in the subject matter and enhancing learning motivation.

Literature Review

The primary objective of reforms in the education system is to foster the spiritual and moral development of young people, to build their ideological immunity by protecting them from alien ideological influences, and to ensure the effectiveness of teaching through the use of information and communication technologies, advanced educational technologies, modular instruction, and modern teaching methods .

According to President Shavkat Mirziyoyev, “Issues related to the development of education and upbringing, science, healthcare, culture and the arts, as well as sports, along with ensuring that our young people acquire profound knowledge and thoroughly master foreign languages and modern information and communication technologies, will remain our constant priority” .

Issues related to mother tongue teaching were initially systematically developed on the basis of methodological and scientific approaches by Y.Abdullayev, M.Omilkhonova, Z.Ma’rufov, and A.G‘ulomov. At the subsequent stage of development, this field was further advanced through the research studies, textbooks, and methodological manuals of H.Ne’matov, M.Usmonova, M.Abduraimova, M.Qodirov, B.To‘xliyev, M.Shamsiyeva, R.Yo‘ldoshev, R.Safarova, R.Tolipova, Sh.Yusupova, R.Niyozmetova, X.Mukhitdinova, A.Rafiyev, A.Mirazizov, K.Mavlonova, and other scholars. This body of scholarly heritage has contributed to strengthening the theoretical foundations of mother tongue teaching methodology, improving didactic principles, and adapting them to practical classroom processes, thereby creating a solid basis for the emergence of in-depth scientific research and innovative approaches in the field.

The integration of digital educational tools into the pedagogical process has created new methodological opportunities for organizing independent learning activities. In the psychological concepts developed by prominent scholars in the fields of psychology and pedagogy A.N.Leontiev, P.Y.Galperin, I.A.Zimnyaya, D.B.Elkonin and N.Boymurodov independent activity is interpreted as a key factor in enhancing learners’ cognitive engagement. Digital tools, in turn, enable this activity to be organized in an interactive, visual, and self-assessment-oriented manner, which ultimately leads to a significant increase in the effectiveness of mother tongue instruction.

Analysis and Results

In order to improve the quality and effectiveness of mother tongue instruction at the primary education stage, the advanced pedagogical practices of foreign countries in the use of digital educational tools are of fundamental importance. At the international level as exemplified by countries such as the United States, Finland, South Korea, and Singapore - this process is not

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merely a matter of technical modernization, but rather embodies a systematic approach grounded in profound pedagogical and scientific theories. In particular, it is based on cognitive load theory, gamification strategies, and the principles of differentiated instruction.

An analysis of foreign practices demonstrates that the active use of interactive and multimedia tools in the educational process contributes to optimizing information perception. From the perspective of cognitive psychology, human working memory is limited, and receiving information simultaneously through two channels - audio and visual (the multimedia principle) - facilitates its transfer to long-term memory. Instead of traditional static, text-based textbooks, electronic textbooks incorporating dynamic animations, video materials, and audio texts make the learning process more engaging, concretize abstract grammatical rules, and enhance learners' intrinsic motivation. This, in turn, creates a solid foundation for raising reading literacy levels in line with the requirements of international assessment systems such as PIRLS.

As a crucial condition for educational effectiveness, foreign practices place significant emphasis on teachers' digital competence. The TPACK (Technological Pedagogical Content Knowledge) model, which integrates educational technologies, pedagogical knowledge, and subject content, serves as a key criterion for assessing teacher qualifications. Teachers' purposeful use of these tools provides a basis for the successful implementation of blended learning models, particularly the flipped classroom approach. Within this framework, students study theoretical material at home through digital resources, while classroom time is devoted to reinforcing practical skills, engaging in discussions, and individualized learning activities.

Digital educational tools and media-based teaching methods are rapidly entering the educational process as effective instruments that provide individualized impact. Media education trains students to think critically, develop creative activities, process information, synthesize knowledge, and draw personal conclusions. Classrooms are increasingly integrating print media, television, radio, cinema, video, and Internet resources, all of which contribute to organizing lessons known as media lessons. Media lessons offer extensive methodological opportunities and advantages within the pedagogical process, enabling teachers not only to convey theoretical information but also to present materials with high efficiency using modern technical tools.

In foreign educational practices, digital educational tools are widely used in teaching the mother tongue at the primary school level. In particular, interactive whiteboards, tablets, adaptive learning programs, and multimedia-based training modules are integrated into the learning process, creating an interactive and dynamic educational environment. Such digital tools provide teachers with didactic materials that offer highly visual, audio, and kinesthetic capabilities for developing phonetic, orthographic, and grammatical skills, as well as reading literacy.

Specifically, foreign experience demonstrates that the use of digital content in mother tongue instruction allows for a more individualized approach, enhances students' engagement, and facilitates rapid assessment of their skills. Interactive exercises, digital texts, animations, and multimodal tasks enable students to gain a deeper understanding of language structures and develop independent learning skills. Furthermore, digital tools expand opportunities for the

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gradual development of students' reading comprehension, oral communication, and lexical competence.

In the United States, the widespread adoption of digital educational tools in primary education is implemented more through state- and district-level strategies than through centralized national policy. Overall, national collaborative initiatives aimed at developing paragraphic and linguistic literacy, as well as adaptive learning platforms developed by the private sector (e.g., IXL, Lexia, Raz-Plus), are widely used in primary schools. Interactive whiteboards and tablets are extensively employed in classrooms to organize lessons, provide audio-visual support, and accelerate assessment processes .

Interactive Whiteboards: These are used in lesson organization to model phonetics and reading activities through visual and kinesthetic elements and to reinforce vocabulary acquisition. Research has shown that digital whiteboards positively influence lesson structuring by providing scaffolding and increasing student engagement.

Adaptive Learning Platforms: These systems, which assign individualized learning paths and exercises based on diagnostic assessments, personalize language learning and enable rapid evaluation of student performance. While meta-analyses exist regarding the effectiveness of these platforms, the findings note methodological limitations and variability in assessment criteria .

Blended Learning and Family Support: Students' engagement with digital resources at home helps reinforce reading and language skills; however, the impact of the digital divide must also be considered. Systematic reviews and experimental studies indicate that digital devices and adaptive programs can have a positive effect on the development of reading and vocabulary skills in primary education. Nevertheless, the outcomes are highly dependent on context, teachers' pedagogical competence, and the quality of resources. Some studies, particularly those with small sample sizes, may present overly optimistic effects, highlighting the need to assess long-term impacts.

Key challenges in the digital learning process include persistent digital inequality, disparities in teachers' professional development opportunities, and insufficient linguistic adaptation of existing platforms, all of which directly affect educational effectiveness. To address these issues in Uzbekistan, it is necessary to conduct pilot studies before the widespread implementation of adaptive learning platforms, provide continuous professional development programs for teachers to effectively integrate digital whiteboards into lessons, and fully adapt learning platforms to the morphological and lexical characteristics of the Uzbek language.

The Finnish education system primarily supports a pedagogically oriented approach known as phenomenon-based learning (PhenoBL), where technology is viewed as a tool to facilitate teaching objectives rather than as an end in itself. National curricula incorporate ICT competencies and the effective use of digital environments; however, pedagogical quality and the socio-economic conditions of students are prioritized over an excessive reliance on technology .

In the case of Finland, post-COVID-19 studies and analyses have reinforced general theoretical perspectives on the role of digital technologies in the classroom: the effectiveness of

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technology is determined by its alignment with the pedagogical context. Evidence from this country indicates that technology primarily functions as a "pedagogical aid" and supports the development of students' critical thinking and collaborative skills. Furthermore, the Finnish experience serves as a reminder for Uzbekistan that technology should be viewed not as an "end" but as a "means" to facilitate teaching and learning .

Investing in technology alone does not guarantee the expected outcomes, and the requirement for teachers to possess deep theoretical knowledge of modern didactic approaches presents significant challenges in implementing digital education. To address these issues, it is necessary to pilot certain elements of the PhenoBL approach at classroom and regional levels in Uzbek schools, align digital tools with teachers' pedagogical objectives, and develop practical methodological guides.

In South Korea, the government's Smart Education initiative is aimed at establishing large-scale digital teaching infrastructure, including digital textbooks, online platforms, classroom technologies, and teacher training programs. Through state-supported standardized platforms and digital textbooks, technology has been systematically integrated into primary education.

Digital Textbooks: Interactive textbooks present learning material in a multimodal format (audio, video, exercises) and allow monitoring of students' progress. These textbooks seamlessly link remote learning with in-class activities, enhancing both engagement and learning outcomes .

Smart Classrooms and Platforms: Classrooms are equipped with Internet connectivity and devices for presentations and interactive activities. Continuous online resources and professional development modules have been established for teachers to support effective use of these technologies .

The South Korean experience has shown that the rapid implementation of digital textbooks and the Smart Education initiative has expanded students' learning opportunities and enhanced assessment and individualization capabilities through technology. However, research indicates that technology alone does not guarantee learning outcomes; insufficiently structured pedagogical approaches or technology-heavy classrooms can increase teachers' workload. Additionally, issues such as digital inequality and data security have been identified as significant challenges in the Korean context.

In Singapore, the Ministry of Education (MOE) developed the Student Learning Space (SLS) - a national online portal that consolidates educational resources and aims to provide equitable and high-quality content to students from primary through secondary education. SLS facilitates the development of 21st-century competencies, promotes collaborative learning, and simplifies resource management for teachers .

Materials available on the SLS platform fully align with national curricula and provide practical support to teachers in developing accurate lesson plans. In primary grades, SLS facilitates the organization of multimodal texts, interactive tasks, and collaborative projects. This process increases students' interest in the subject, makes lessons more engaging, and supports teachers in applying methodological approaches effectively.

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Through digital platforms, the assessment and continuous support process enables regular recording, analysis, and monitoring of students' individual progress. Such systems allow for the early identification of learning gaps, timely pedagogical intervention by teachers, and simplified monitoring of education quality. Consequently, digital assessment mechanisms not only reflect students' achievements but also serve as important analytical tools for school-level decision-making and educational management.

The implementation of SLS aligns with the centralized, standardized, and quality-focused nature of Singapore's education system. Research and practical reports indicate that the SLS platform is effective in enriching lessons, enhancing students' independent learning skills, and ensuring equitable access to resources. However, this effectiveness depends on reliable network infrastructure and teachers' competence in pedagogically appropriate use of the platform.

Creating a centralized educational platform requires significant investment, technical maintenance, and regular modernization, as well as adaptation of content to national culture and language. To address these challenges in Uzbekistan, the development of a national platform similar to SLS should prioritize local and mother-tongue content, strengthen network and server infrastructure for stable operation, and train teachers to use the platform effectively for pedagogical purposes.

Table 1 Comparison of foreign practices in using digital educational tools for mother tongue instruction in primary grades

Country	Digital Tools - Platforms	Pedagogical methods	Impact on students	Teacher role	Challenges
USA	Interactive whiteboards, adaptive learning programs (IXL, Lexia), tablets	Individualized instruction, blended learning	Strengthening language and reading competencies; fostering independent thinking	Facilitator, resource manager	Digital divide; linguistic adaptation of platforms
Finland	Multimedia resources, online platforms, phenomenon-based teaching projects	Phenomenon-based learning (PhenoBL), project-based learning	Development of collaboration and critical thinking skills	Pedagogical guidance, technology as support	Avoiding over-reliance on technology; teacher preparation requirements
South Korea	Digital textbooks, Smart classrooms, online platforms	"Smart Education," standardized digital lessons	Monitoring learning outcomes; individualized development of language skills	Managing technology and supervising learning process	Increased teacher workload; digital inequality
Singapore	Student Learning Space (SLS), multimodal resources, online exercises	Centralized platform, 21st-century competencies	Independent learning; collaborative learning; continuous assessment	Resource manager; guiding students	Adapting platform to national culture and language; technical and financial investment required

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This table systematically presents the key characteristics of digital educational tools, pedagogical approaches, their impact on students and teachers, and the challenges encountered in teaching the mother tongue in primary grades across foreign countries. Through the table, the effectiveness and integration methods of digital tools are compared across different countries, highlighting both their advantages and limitations. It also provides a scientific basis for developing recommendations for the effective implementation of digital tools in the context of Uzbekistan.

Conclusions

The analysis of international experiences indicates that the implementation of digital educational tools in primary grades for mother tongue instruction serves as an effective means of developing students' linguistic competencies, fostering independent and creative thinking skills, and increasing their engagement in lessons. In the United States, adaptive learning programs and interactive whiteboards support the individualization of the learning process. In Finland, phenomenon-based learning demonstrates effective pedagogical use of technology. In South Korea, the Smart Education initiative promotes systematic integration of technology, while in Singapore, centralized online platforms enable continuous assessment and collaborative learning opportunities for students.

The findings show that the effectiveness of digital tools is directly linked to their alignment with pedagogical objectives, teachers' qualifications and didactic preparedness, as well as the adaptation of learning content to the national cultural and linguistic context. Therefore, in the context of Uzbekistan, effective implementation of digital tools requires pilot studies, in-class experimental monitoring, and professional development programs for teachers. Additionally, localizing content in the mother tongue and gradually integrating multimodal learning resources will ensure a deep and thorough mastery of the language by students.

As a result, the experiences of foreign countries provide a scientific basis for developing a systematic approach to teaching the mother tongue using digital tools in Uzbek schools. This approach, in turn, enhances the quality of language learning in primary grades, develops students' linguistic and creative potential, and promotes a more effective engagement with national cultural heritage.

In summary, the analysis of international practices in using digital educational tools for mother tongue instruction demonstrates that these approaches equip students not only with linguistic knowledge but also with functional literacy, media literacy, and communicative skills necessary for successful participation in the information society. These experiences serve as a crucial scientific and methodological foundation for integrating digital pedagogical technologies into the national education system.

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