



**Using digital educational technologies to build grammatical knowledge in
primary school students**

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Abstract: The integration of digital educational technologies in primary education has emerged as a powerful approach to enhancing grammatical knowledge among young learners. Traditional grammar instruction often relies on rote memorization and repetitive drills, which can lead to low engagement and limited retention. Digital tools, such as interactive apps, gamified platforms, multimedia resources, and digital storytelling, provide interactive, visual, and personalized learning experiences that make grammar concepts more accessible and enjoyable for primary school students (typically aged 6-10). This thesis explores the relevance, methods, and outcomes of using these technologies to build grammatical competence, including parts of speech, sentence structure, tenses, and basic syntax. Results indicate improved motivation, engagement, and grammatical accuracy when technology is thoughtfully integrated. The study draws on international and Uzbek pedagogical research to highlight practical applications and challenges in primary classrooms.

Keywords: digital educational technologies, grammar teaching, primary school students, interactive learning, grammatical knowledge, edtech tools, digital storytelling, personalized learning.

Introduction: In the modern era of rapid digitalization, education systems worldwide are incorporating information and communication technologies (ICT) to improve teaching and learning processes. Primary education, as the foundational stage, requires innovative methods to develop core language skills, particularly grammar, which forms the basis for effective communication [1]. Grammar instruction in primary schools has traditionally been teacher-centered and rule-based, often resulting in passive learning. Digital technologies offer opportunities to shift toward student-centered, interactive approaches that align with children's developmental needs, such as visual-auditory support and gamification [2]. This work examines how tools like educational apps, interactive whiteboards, and digital storytelling can build grammatical knowledge effectively.

Relevance of Work: The relevance stems from the growing emphasis on digital literacy in primary education, especially in Uzbekistan, where national programs promote the integration of raqamli ta'lim texnologiyalari (digital educational technologies) to enhance communicative competencies [3]. Globally, research shows that technology increases engagement and supports personalized learning for grammar [4]. In primary settings, where attention spans are short, traditional methods may fail to sustain interest, leading to gaps in grammatical understanding. Digital tools address this by providing immediate feedback, multimedia explanations, and fun practice, making grammar learning more effective and motivating [5]. This is particularly important post-pandemic, where blended and online elements have become standard [6].

Purpose: The purpose of this study is to analyze the effectiveness of digital educational technologies in developing grammatical knowledge among primary school students, to identify suitable tools and methods, and to propose practical recommendations for teachers in Uzbek primary schools.

Materials and Methods of Research: The research is based on a literature review of international and Uzbek sources, including empirical studies, systematic reviews, and pedagogical articles. Methods include analysis of secondary data from meta-analyses on technology in language learning, case studies on digital tools in grammar instruction, and observations from related educational contexts. Key tools examined include gamified apps (e.g., Duolingo for Schools adaptations), interactive platforms (e.g., Kahoot or Quizlet for grammar drills), digital storytelling software (e.g., WeVideo or similar), and multimedia resources for visual grammar explanations [7]. Uzbek sources focus on raqamli texnologiyalarni boshlang'ich ta'limda qo'llash [8]. The approach emphasizes qualitative synthesis with references to quantitative outcomes from prior studies.

Results and Discussion: Studies demonstrate that digital technologies significantly enhance grammatical knowledge in primary students. Interactive tools provide visual and auditory support, leading to better understanding of concepts like sentence formation and tenses [4]. For instance, digital storytelling allows students to create narratives incorporating targeted grammar rules, improving application in context and creativity [2]. Gamification increases motivation through rewards and immediate feedback, resulting in higher engagement and retention compared to traditional methods [5]. Personalized adaptive platforms adjust difficulty levels, supporting diverse learner needs and reducing frustration [9].



In primary education, tools like block-based programming or simple apps introduce logical grammar structures indirectly, while multimedia content aids comprehension of parts of speech [10]. Challenges include access to devices, teacher training, and over-reliance on technology without pedagogical guidance [11]. In Uzbek contexts, integrating raqamli texnologiyalar develops communicative skills and ijodiy ko'nikmalar (creative skills) in boshlang'ich sinf o'quvchilari [3][8]. Overall, when teachers combine technology with guided instruction, outcomes show medium to strong effects on grammatical accuracy and learner attitudes [6].

Conclusion: Digital educational technologies offer substantial benefits for building grammatical knowledge in primary school students by making learning interactive, personalized, and engaging. They transform abstract grammar rules into concrete, enjoyable experiences, fostering deeper understanding and long-term retention. However, success depends on teacher competence, resource availability, and balanced integration with traditional methods. In Uzbekistan, further adoption of these technologies in boshlang'ich ta'lim can align with national digital education goals, ultimately improving language proficiency. Future research should focus on longitudinal studies in local settings to measure sustained impacts.

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