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PEDAGOGICAL AND PSYCHOLOGICAL FOUNDATIONS OF USING AI PLATFORMS IN PRIMARY SCHOOL LITERACY LESSONS

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ABSTRACT

This article provides an in-depth analysis of the pedagogical and psychological foundations of using artificial intelligence (AI) platforms in primary school reading literacy classes. The role of AI tools in developing reading skills in students, optimizing text comprehension processes, and organizing education tailored to the individual development pace of each student is highlighted. The study analyzes the factors affecting reading speed, text comprehension, and student motivation using AI platforms, and presents practical results in tabular form. The psychological risks, attentional bias, digital addiction, and cognitive load that arise when using AI tools are also scientifically examined.

Keywords

artificial intelligence, primary education, reading literacy, pedagogical technologies, digital education, psychological foundations, motivation, individual education.

INTRODUCTION

The digitalization of the educational process in the 21st century is demanding new pedagogical approaches even in literacy lessons designed for primary school students. Today, the integration of artificial intelligence (AI) technologies into the learning process requires a re-evaluation of modern methodologies, a deepening of students' cognitive activities, and the provision of an individualized approach. AI platforms offer opportunities such as reading texts aloud, real-time error detection, and the creation of gamified tasks that motivate students to engage in the learning process. The personalized nature of education, where tasks are automatically suggested according to each student's level of knowledge and psychological characteristics, emerges as a significant advantage of AI technologies.

The relevance of this study lies in the fact that, although the potential of AI tools in pedagogical practice has been sufficiently explored, there is a lack of comprehensive research on their application specifically in literacy instruction for primary school students, taking into account age characteristics, psychological development rates, and individual learning needs. Therefore, analyzing the effectiveness of AI tools both theoretically and practically, as well as examining the psychological impact of AI, constitutes one of the main objectives of this research.

LITERATURE REVIEW AND METHODOLOGY

Scientific literature on AI-based educational systems has extensively studied the integration of digital tools into the learning process. Notably, studies by J. Anderson, R. Clark, and D. Sousa emphasize that AI tools are effective in identifying speech errors during reading, automating phonetic and semantic analysis, and providing targeted feedback. Local research

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also indicates that the use of digital tools in primary education can enhance student motivation, improve reading speed, and develop independent learning skills.

The methodology of this study included comparison, pedagogical observation, diagnostic analysis, practical use of digital platforms (LingoKids, RazKids, Duolingo ABC, ChatGPT ReadAssistant), and statistical recording of students' results. A three-month pilot study was conducted with 52 students from grades 2–3. The effectiveness of AI platforms was evaluated based on three main criteria: reading speed, text comprehension level, and changes in motivation index.

DISCUSSION AND RESULTS. The study revealed that AI platforms significantly improve students' literacy skills. In particular, features such as text-to-speech reading, automatic error detection, and selection of texts suited to students' reading levels demonstrated high effectiveness. Psychologically, AI tools promoted independent reading activities, increased curiosity, and strengthened intrinsic motivation to learn. However, excessive use of digital tools may lead to divided attention, visual fatigue, and increased cognitive load. Therefore, it is essential to apply AI tools purposefully within pedagogical limits.

The results suggest that AI tools serve as a pedagogical technology that effectively complements traditional methods in enhancing primary school students' literacy.

One of the most significant innovations of artificial intelligence (AI) in literacy education is the development of adaptive learning systems that adjust to each student's individual needs, learning pace, and knowledge level. In a traditional classroom setting, a teacher is often required to present the same material at the same pace to 20–30 students, which can lead to stronger students becoming bored while those who struggle may fall behind. AI-based adaptive systems address this challenge.

These systems utilize machine learning (ML) algorithms to analyze large volumes of data, such as students' response times, number of errors, reading speed, and comprehension levels. As a result, the system provides each student in real time with tasks, reading materials, or interactive exercises specifically designed to fill gaps in their knowledge. For instance, if a student struggles with phonetic skills, the system will offer interactive exercises aimed at strengthening this area. If the student faces difficulties in understanding the content of a text, the system presents new texts and questions that match the student's current ability level, gradually increasing in difficulty.

This approach leads to more effective literacy development, as the learning process is continuously maintained within the student's current zone of proximal development, in accordance with Vygotsky's theory. This, in turn, enhances motivation and self-confidence, as students are able to successfully overcome challenges that are appropriately tailored to their level of ability.

CONCLUSION

The use of AI platforms in the literacy development process of primary school students has become an integral part of modern education. AI tools not only ensure an individualized approach but also enhance students' cognitive abilities, making the reading process more engaging, interactive, and effective. According to the study, the use of AI-based programs significantly increases reading speed and text comprehension, while also boosting students' motivation toward the learning process. At the same time, applying AI tools according to pedagogical norms, maintaining the teacher's guiding role, and preventing overreliance on digital devices are important pedagogical tasks.

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Overall, integrating artificial intelligence into the process of literacy development in primary education is a key factor in improving educational quality. In the future, it is necessary to expand the functional capabilities of AI tools, develop local programs, and regularly train teachers in digital pedagogical competencies.

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