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PERSONALIZED ACADEMIC WRITING DEVELOPMENT VIA ARTIFICIAL INTELLIGENCE: AN ADAPTIVE PROFICIENCY-ORIENTED FRAMEWORK

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ABSTRACT

This study investigates the role of artificial intelligence in personalizing academic writing instruction based on learners' proficiency levels. It focuses on how AI tools can support English language learners in improving writing skills through adaptive scaffolding and individualized feedback. A mixed-methods approach was applied with B1 and B2 level undergraduate students over a four-week intervention. Participants engaged in AI-assisted writing tasks tailored to their proficiency levels. The findings show that AI-based instruction significantly improves writing performance, particularly in grammar accuracy for B1 learners and coherence and academic style for B2 learners. Overall, the study suggests that AI can serve as an effective supportive tool in academic writing instruction while complementing, rather than replacing, the teacher's role.

Keywords: *Artificial Intelligence, Academic Writing, Personalized Learning, Adaptive Scaffolding, Proficiency Levels, AI-Assisted Feedback, English Language Learning.*

INTRODUCTION

Academic writing is widely recognized as one of the most challenging skills in English language learning, requiring not only linguistic accuracy but also logical thinking, coherence, and genre awareness. Many learners struggle to develop these skills due to the traditional one-size-fits-all teaching approach, which does not adequately address individual differences in proficiency levels [1].

In recent years, artificial intelligence has become an increasingly important tool in education, offering new opportunities for personalized learning. AI-based systems can analyze learners' performance in real time, provide immediate feedback, and adjust instructional content according to individual needs. This study explores how such

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capabilities can be applied to academic writing instruction in order to create a more adaptive and proficiency-oriented learning environment.

LITERATURE REVIEW

Academic writing development has been extensively studied in applied linguistics. Hyland emphasizes that writing is a social and communicative activity that requires attention to audience, purpose, and disciplinary conventions. He highlights feedback as a key factor in improving writing proficiency [2].

Similarly, Swales introduces the genre-based approach, explaining that academic writing follows specific rhetorical structures depending on the discipline. This suggests that learners need structured guidance to master academic genres gradually [3].

From a theoretical perspective, Vygotsky's Zone of Proximal Development (ZPD) explains how learners achieve better results when supported within their optimal challenge level [4]. This theory forms the foundation of adaptive scaffolding used in this study.

In the field of educational technology, AI research highlights the potential of intelligent systems in learning environments. Modern studies show that AI can support personalized instruction by analyzing learner data and adapting tasks dynamically [5].

In the context of English language teaching in Uzbekistan, researchers such as Azimova and Tohirova have explored learner-centered and interactive approaches, emphasizing the importance of adapting instruction to students' needs. However, integration of AI into academic writing instruction remains underdeveloped, creating a research gap [6].

METHODOLOGY

This study employed a mixed-methods research design to examine the effectiveness of AI-assisted personalized academic writing instruction. The participants were undergraduate English language learners divided into B1 and B2 proficiency levels based on standardized placement criteria.

The research was conducted over a four-week period and included three stages: pre-assessment, intervention, and post-assessment. In the pre-assessment stage, participants completed an academic writing task to determine their baseline proficiency.

During the intervention phase, students engaged in AI-supported writing activities. AI tools provided immediate feedback on grammar, vocabulary, coherence, and argument structure. Instruction was adapted according to proficiency levels: B1

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learners focused on grammar and sentence structure, while B2 learners developed coherence and academic argumentation.

Adaptive scaffolding was implemented to adjust instructional support based on learner needs. A prompt-based learning strategy was also introduced to enhance interaction with AI tools and improve independent writing skills. The writing process followed a structured cycle of drafting, revising, and editing with continuous AI support.

Data were collected from pre-test and post-test writing tasks and analyzed using an analytic rubric focusing on grammar, coherence, vocabulary, and organization. Both quantitative and qualitative data were used for analysis.

RESULTS AND DISCUSSION

The results indicate that AI-assisted personalized instruction had a positive impact on students' academic writing performance. A comparison of pre-test and post-test results shows noticeable improvement across both proficiency levels.

B1 learners demonstrated significant progress in grammatical accuracy and sentence construction. This improvement is linked to immediate corrective feedback provided by AI tools.

B2 learners showed improvement in coherence, argument development, and academic writing style. AI feedback helped them refine ideas and improve logical flow.

These findings support the effectiveness of adaptive scaffolding based on the Zone of Proximal Development theory. Providing learners with appropriate support ensured balanced learning without overload.

Student engagement also increased during the intervention. Learners reported reduced anxiety and higher motivation due to instant feedback and revision opportunities. Prompt-based interaction further enhanced digital literacy skills.

CONCLUSION

This study demonstrates that artificial intelligence can effectively enhance academic writing instruction when adapted to learners' proficiency levels. Both B1 and B2 learners benefited from AI-assisted instruction, although in different aspects of writing development.

The findings confirm that AI tools are particularly effective in improving grammar accuracy, coherence, and academic style when combined with adaptive scaffolding strategies. Additionally, AI promotes learner autonomy and supports process-oriented writing development.

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However, AI should be used as a complementary tool rather than a replacement for teachers, as human guidance remains essential for developing critical thinking and ensuring academic integrity.

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