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AI-DRIVEN ADAPTIVE LEARNING SYSTEMS IN ENGLISH LANGUAGE TEACHING: ENHANCING PERSONALIZATION AND LEARNER AUTONOMY

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Abstract: This study explores the role of artificial intelligence-driven adaptive learning systems in enhancing personalization and learner autonomy in English language teaching. The primary aim is to investigate how AI-based platforms such as ChatGPT and Duolingo influence learners' language competence, motivation, and self-directed learning abilities. The research adopts a mixed-method approach combining theoretical analysis with a quasi-experimental design, in which learners engage with AI-supported instructional environments over a structured period. The findings reveal that adaptive learning systems significantly improve learners' engagement, facilitate individualized learning pathways, and enhance language acquisition through real-time feedback and automated assessment. The results also indicate that AI tools promote learner autonomy by enabling flexible, personalized, and continuous learning beyond the classroom context. This study contributes to the growing body of research on artificial intelligence in education and provides practical implications for integrating adaptive technologies into English language teaching.

Keywords: Artificial intelligence, adaptive learning, English language teaching, learner autonomy, personalization.

Introduction

The rapid advancement of artificial intelligence technologies has introduced new possibilities for transforming educational practices, particularly in the field of language learning, where personalization and continuous feedback play a critical role in skill development. In English language teaching, traditional instructional approaches often rely on uniform teaching strategies that do not fully address individual learner differences in proficiency, pace, and learning styles. As a result, many learners struggle to achieve optimal outcomes due to the lack of tailored instructional support. In response to these challenges, AI-driven adaptive learning systems have emerged as innovative tools that dynamically adjust instructional content, difficulty level, and feedback based on learners' performance and needs. Platforms such as ChatGPT and Duolingo exemplify how artificial intelligence can support language acquisition through interactive dialogue, personalized exercises, and automated feedback mechanisms. Despite the increasing integration of AI technologies into education, there remains a need for systematic research examining their pedagogical effectiveness, particularly in relation to learner autonomy and individualized learning processes. Therefore, this study aims to investigate the impact of AI-driven adaptive learning systems on English language learning outcomes and to evaluate their role in promoting personalized and autonomous learning environments.

Methodology

This study adopts a mixed-method research design that integrates quantitative and qualitative approaches to examine the effectiveness of artificial intelligence-driven adaptive learning systems in English language teaching. The research was conducted in a higher education context where participants were divided into control and experimental groups to compare traditional instructional methods with AI-supported learning environments. The control group received conventional instruction based on textbooks, teacher explanations, and standard exercises, while the experimental group engaged in adaptive learning activities using

ChatGPT and Duolingo over a structured instructional period. The participants were intermediate-level English learners, and the intervention focused on developing speaking, vocabulary, and writing skills through personalized tasks, real-time feedback, and interactive dialogue systems. Data collection instruments included pre-tests and post-tests to measure language competence, learner autonomy questionnaires to assess self-directed learning behaviors, classroom observations to evaluate engagement levels, and semi-structured interviews to explore learners' perceptions of AI-based learning. The quantitative data were analyzed using descriptive and comparative statistical methods to identify performance differences between the groups, while qualitative data were interpreted through thematic analysis to reveal patterns in learner motivation, interaction, and autonomy development. The methodological triangulation ensured the reliability and validity of the findings and provided a comprehensive understanding of how adaptive AI technologies influence language learning outcomes.

Results

The results of the study indicate that the integration of artificial intelligence-driven adaptive learning systems has a significant positive impact on learners' language competence, engagement, and autonomy in English language learning. Students in the experimental group demonstrated higher post-test scores compared to the control group, reflecting improvements in vocabulary acquisition, speaking fluency, and writing accuracy. The use of ChatGPT enabled learners to practice language through interactive dialogue, receive immediate corrective feedback, and refine their linguistic output in real time, which contributed to greater confidence and communicative ability. Similarly, Duolingo supported adaptive learning by providing personalized exercises based on individual performance, allowing learners to progress at their own pace and revisit challenging content as needed. Observational data revealed that students engaged more actively in learning tasks, demonstrated increased independence in completing assignments, and relied less on teacher guidance compared to those in the control group. Questionnaire responses and interview findings further indicated that learners perceived AI-based learning as flexible, efficient, and motivating, particularly due to its ability to provide continuous support and individualized feedback. Overall, the results confirm that adaptive AI technologies enhance both cognitive and affective dimensions of language learning, leading to improved academic performance and stronger learner autonomy.

Discussion

The findings of this study provide strong evidence that artificial intelligence-driven adaptive learning systems can significantly enhance the effectiveness of English language teaching by addressing one of the most persistent limitations of traditional instruction, namely the inability to accommodate individual learner differences in pace, proficiency level, and learning preferences. The improved performance of the experimental group suggests that AI-supported instructional environments contribute not only to measurable language gains but also to the development of learner autonomy, which is increasingly recognized as a fundamental component of successful language acquisition in contemporary educational settings. The effectiveness of platforms such as ChatGPT can be explained through their capacity to simulate authentic interaction, generate immediate feedback, and provide learners with unlimited opportunities for practice without the fear of negative evaluation often associated with teacher-centered classroom interaction. This creates a psychologically supportive learning environment in which students can experiment with language, identify errors, and refine their output through repeated interaction. In addition, the adaptive algorithms used by Duolingo facilitate individualized progression by continuously adjusting

task difficulty and content according to learner performance, thereby increasing both efficiency and engagement. These findings align with constructivist and self-regulated learning theories, which emphasize active learner participation, personalized learning pathways, and the importance of feedback in knowledge construction. However, the study also identified several challenges associated with the integration of AI technologies into language education. These include potential overreliance on technology, limited critical evaluation of automatically generated content, and the need for teachers to develop sufficient digital and pedagogical competence to effectively manage AI-supported instruction. Furthermore, while AI systems offer considerable flexibility and personalization, they cannot fully replace the socio-emotional and interpersonal dimensions of human teaching, particularly in fostering cultural competence, empathy, and collaborative interaction. Therefore, the most effective pedagogical model is likely to involve a balanced integration of AI tools with teacher guidance, ensuring that technology functions as a complementary rather than substitutive component of the educational process.

Conclusion

In conclusion, this study demonstrates that artificial intelligence-driven adaptive learning systems represent a highly promising innovation in English language teaching by enhancing personalization, learner engagement, and autonomy. The findings indicate that AI-supported platforms significantly improve learners' language competence through individualized learning experiences, immediate feedback, and flexible access to instructional content beyond traditional classroom limitations. The integration of adaptive technologies into English language education not only supports vocabulary development, speaking fluency, and writing accuracy but also encourages learners to take greater responsibility for their own educational progress, thereby strengthening self-regulated learning behaviors. At the same time, the study highlights the importance of maintaining pedagogical balance, as the successful implementation of AI technologies depends on teacher preparedness, institutional support, and critical integration within broader educational frameworks. Artificial intelligence should therefore be viewed not as a replacement for educators but as a strategic pedagogical tool capable of enriching instructional practice and expanding learning opportunities. Future research should focus on long-term learning outcomes associated with AI integration, the ethical implications of automated educational systems, and the development of hybrid instructional models that combine adaptive technologies with human-centered teaching approaches in diverse educational contexts.

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