



THE ROLE OF DIGITAL TECHNOLOGY AND ARTIFICIAL INTELLIGENCE IN TEACHING AND LEARNING LANGUAGES

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Abstract. Digital technology and artificial intelligence (AI) are reshaping how languages are taught and learned worldwide. This thesis paper examines the growing role of AI-driven tools — including chatbots, intelligent tutoring systems, and adaptive learning platforms — in supporting vocabulary acquisition, writing, speaking, and learner engagement. Drawing on recent empirical and review studies, the paper discusses both the pedagogical benefits of AI integration, such as personalized feedback and increased learner motivation, and the challenges it raises, including digital inequality, insufficient teacher training, and concerns about learner autonomy. The paper concludes that AI holds significant promise for language education when combined with sound pedagogical guidance rather than used as a replacement for it.

Keywords: artificial intelligence, digital technology, language teaching, language learning, CALL, adaptive learning, learner engagement

Introduction

Over the past two decades, language education has undergone a marked shift away from purely classroom-based instruction toward technology-enhanced and, increasingly, AI-driven approaches. Computer-Assisted Language Learning (CALL) tools, mobile applications, and immersive technologies such as virtual and augmented reality have expanded the range of environments in which learners can practice a target language. More recently, the emergence of generative AI systems and conversational chatbots has introduced a new layer of interactivity, offering learners immediate feedback, adaptive practice, and personalized learning paths that were previously difficult to achieve at scale. This paper examines how digital technology and AI are being integrated into language teaching and learning, the benefits this integration offers, and the challenges that remain unresolved.

The Role of Digital Technology and AI in Language Education

Research shows that AI tools now support all five major language skills — vocabulary, reading, writing, listening, and speaking — with a large-scale meta-analysis of dozens of empirical studies confirming significant positive effects, though the size of these effects varies by educational level and instructional context. Systematic reviews of AI applications in language learning further indicate that tools such as chatbots and pedagogical agents contribute to better vocabulary retention, reduced foreign language anxiety, and higher learner motivation, particularly when their design is grounded in established educational theories such as self-determination theory. In university-level English classrooms, AI tools



including conversational chatbots and grammar-checking software have been used to support writing, vocabulary acquisition, and assessment, with both learners and instructors reporting generally positive attitudes toward their use.

Beyond conversational agents, augmented reality (AR), virtual reality (VR), and mixed reality (MR) technologies have been used to create simulated environments that expose learners to a target language in more immersive and contextualized ways. A twenty-year scoping review of AI applications in language learning research documents a clear shift from early rule-based systems toward advanced, data-driven AI applications, with chatbots and commercial AI tools now dominating the research landscape.

Challenges and Limitations

Despite these benefits, current research also points to significant limitations. Reviewers have identified digital inequality, insufficient teacher training, algorithmic bias, and a restricted range of languages well supported by AI tools as ongoing concerns. Some studies further suggest that reliance on AI tools can undermine the development of learner self-regulation: because AI systems often help learners complete tasks without explicitly teaching them how to manage their own learning, students may become more confident and engaged without necessarily becoming more autonomous. This suggests that AI tools are most effective as a complement to, rather than a replacement for, deliberate pedagogical scaffolding.

Conclusion

Digital technology and artificial intelligence have become integral to contemporary language teaching and learning, offering personalized feedback, greater learner engagement, and expanded opportunities for practice outside the traditional classroom. At the same time, unresolved challenges — including unequal access to technology, gaps in teacher preparedness, and the risk of underdeveloped learner autonomy — mean that AI should be integrated thoughtfully and in combination with sound pedagogical design, rather than treated as a self-sufficient solution. Future research should continue to examine how AI tools can be aligned with established language-learning theory to maximize their pedagogical value.

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