



Beyond the Algorithm: The Promise and Paradox of AI in EFL Education

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Abstract

Artificial Intelligence (AI) is increasingly central to English as a Foreign Language (EFL) education, offering benefits such as scalability, personalized learning, and immediate feedback. However, debates persist regarding its effectiveness in addressing the full scope of language learning, particularly in fostering creativity, cultural fluency, and emotional expression. This review analyzes empirical case studies from AI-driven education platforms, showing notable improvements in student outcomes but also revealing significant limitations in areas such as intercultural communication and creativity. By applying Gödel's Incompleteness Theorem, which highlights the inherent limitations of formal systems, this review seeks to answer the research question: "To what extent can AI support the nuanced cognitive and emotional dimensions of EFL learning, and how can a hybrid model of AI and human instruction optimize language acquisition?" While AI excels at automating repetitive, rule-based tasks, it struggles to engage with deeper cognitive and emotional dimensions of learning. Ethical concerns, including algorithmic bias, dehumanization, and data privacy, are also considered, emphasizing the need for a balanced, hybrid approach that leverages AI's strengths while preserving the irreplaceable human elements of teaching. The review concludes with practical recommendations for integrating AI into blended learning models and calls for further research to optimize language learning outcomes through AI-human collaboration.

Keywords: Artificial Intelligence, education, incompleteness theorem, blended learning models, AI-human collaboration

