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Generative Artificial Intelligence in University Efl Education: A Review of Recent Studies and Pedagogical Implications

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ABSTRACT: The rapid development of generative artificial intelligence (AI) has significantly transformed university English as a Foreign Language (EFL) education, creating new opportunities for language learning, teaching, and assessment. This review synthesizes recent studies published between 2023 and 2025 to provide an overview of current research trends, major findings, research gaps, and pedagogical implications of generative AI in university EFL contexts. A critical narrative review with a systematic literature search was conducted using studies retrieved from Scopus, Web of Science, and Google Scholar. The reviewed literature indicates that research has expanded rapidly following the emergence of ChatGPT, with writing instruction, learner perceptions, and language performance being the most frequently investigated topics. Across the reviewed studies, generative AI was found to enhance language learning through personalized feedback, increased learner autonomy, and greater learning engagement. However, concerns regarding academic integrity, AI literacy, ethical issues, and institutional readiness remain significant challenges to its sustainable implementation. The review also identifies several research gaps, including the limited diversity of AI applications investigated, the dominance of short-term quantitative studies, and the lack of longitudinal and classroom-based research. Overall, this review highlights the importance of integrating generative AI through responsible pedagogical practices and provides directions for future research and AI-enhanced university EFL education.

KEYWORDS: generative artificial intelligence; university EFL education; ChatGPT; language learning; literature review; pedagogical implications

1. INTRODUCTION

The rapid advancement of Artificial Intelligence (AI), particularly generative AI, has significantly influenced higher education by transforming teaching, learning, and assessment practices. Since the public release of ChatGPT in late 2022, AI-powered tools have been increasingly integrated into university education to support personalized learning, immediate feedback, academic writing, language practice, and self-directed learning (Kasneci et al., 2023; UNESCO, 2023). As a result, AI has become an important area of research in English as a Foreign Language (EFL) education.

In university EFL contexts, recent studies have investigated the use of various AI tools, including ChatGPT, Grammarly, Gemini, Claude, ELSA Speak, and SpeechAce, to enhance students' language learning. Previous research has reported positive outcomes in writing, speaking, reading, vocabulary learning, and formative assessment. AI has been shown to improve learners' engagement, motivation, language performance, and learner autonomy by providing personalized support and immediate feedback (Lo et al., 2024; Kohnke et al., 2024). Nevertheless, researchers have also highlighted challenges related to academic integrity, AI-generated misinformation, ethical concerns, students' overreliance on AI, and the need for AI literacy among both teachers and learners (Kasneci et al., 2023; Dwivedi et al., 2023).

Although the number of studies on AI in university EFL education has increased considerably over the past few years, the existing literature remains fragmented. Most studies have focused on individual AI tools, particularly ChatGPT, or on specific language skills such as writing. Comparatively fewer studies have synthesized broader research trends, common pedagogical findings, persistent challenges, and future research priorities across university EFL contexts (Lo et al., 2024). Therefore, an updated review is needed to provide a comprehensive overview of recent developments in this rapidly evolving field.

Accordingly, this paper reviews recent studies on the application of AI in university EFL education published between 2023 and 2025. Specifically, it aims to (1) identify major research trends, (2) synthesize the reported educational benefits and challenges, (3) highlight existing research gaps, and (4) discuss pedagogical implications and future directions for AI integration in university EFL teaching and learning.

2. METHODOLOGY

This study employed a critical narrative review supported by a systematic literature search to synthesize recent research on the application of generative artificial intelligence (AI) in university English as a Foreign Language (EFL) education. To enhance the transparency of the review process, the literature search was guided by the principles of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021).

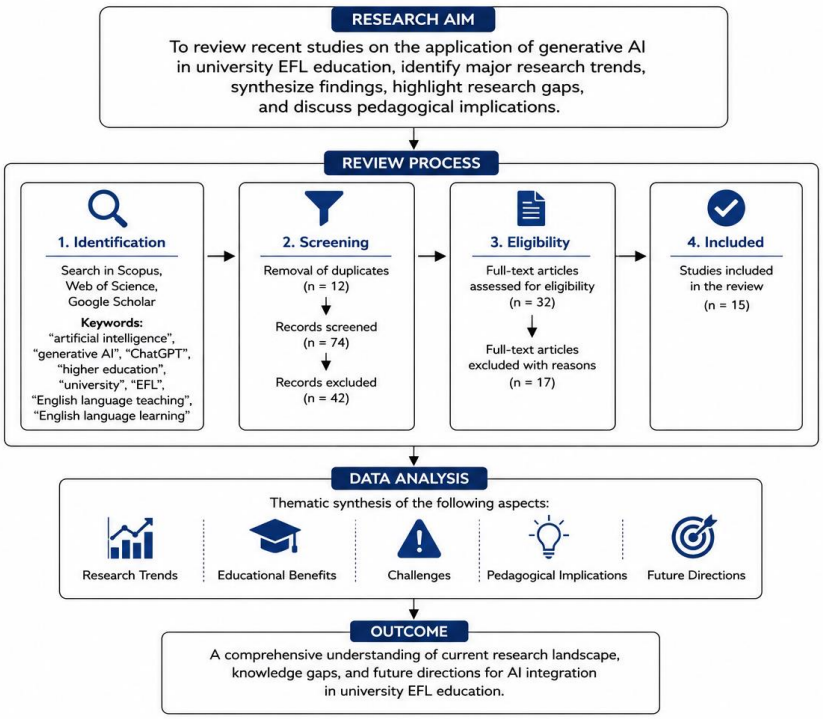
Relevant studies were retrieved from three major academic databases: Scopus, Web of Science, and Google Scholar. The search was conducted using combinations of the following keywords: *artificial intelligence*, *generative artificial intelligence*, *ChatGPT*, *higher education*, *university*, *EFL*, *English language teaching*, and *English language learning*. Boolean operators (AND, OR) were applied to refine the search and identify relevant publications.

The review focused on studies published between **2023 and 2025**, as this period represents the rapid expansion of generative AI research following the public release of ChatGPT in late 2022 (Kasneci et al., 2023; Lo et al., 2024). The inclusion criteria were: (1) peer-reviewed journal articles; (2) empirical studies or review papers; (3) research conducted in university or higher education EFL/ESL contexts; and (4) publications written in English. Editorials, opinion papers, conference abstracts, and studies unrelated to language education were excluded.

After screening the retrieved publications, the selected studies were reviewed and analyzed using thematic synthesis. The analysis focused on four aspects: (1) research trends, (2) educational benefits, (3) challenges and limitations, and (4) pedagogical implications. This approach enabled the identification of common patterns, emerging issues, and future research directions regarding the integration of generative AI into university EFL education.

Figure 1 below presents the research framework of this review. Following the literature selection process, the included studies were synthesized thematically to identify major research trends, benefits, challenges, pedagogical implications, and future directions of generative AI in university EFL education.

Figure 1. Research Framework of the Review



3. CURRENT RESEARCH LANDSCAPE

This section provides an overview of the current research landscape on the application of generative artificial intelligence (AI) in university English as a Foreign Language (EFL) education. Rather than discussing individual findings, it summarizes the publication trends, research contexts, methodological characteristics, and AI applications represented in the reviewed studies.

3.1 Publication Trends

Research on generative AI in university EFL education has expanded rapidly since the public release of ChatGPT in late 2022. The reviewed studies, published between 2023 and 2025, demonstrate growing scholarly interest in exploring the pedagogical potential of AI-assisted language learning. This rapid increase reflects the widespread adoption of generative AI technologies in

higher education and the urgent need to understand their implications for English language teaching and learning (Kasneci et al., 2023; Lo et al., 2024).

Although early studies primarily explored students' perceptions of ChatGPT, more recent research has examined learning outcomes, classroom implementation, AI-supported assessment, learner autonomy, and ethical considerations. This progression suggests that research has gradually shifted from investigating the feasibility of AI applications toward examining their pedagogical effectiveness and sustainable integration into university EFL education.

3.2 Characteristics of the Reviewed Studies

Table 1 presents the characteristics of the 15 studies reviewed in this paper. Several notable patterns can be observed. First, the majority of studies were conducted in Asian countries, particularly China, South Korea, Vietnam, Saudi Arabia, Indonesia, and Malaysia, reflecting the rapid adoption of generative AI technologies in EFL education across the region. University students were the primary research participants, whereas studies involving teachers, curriculum developers, or institutional stakeholders were comparatively limited.

Regarding research methodology, quantitative and mixed-methods approaches predominated, with experimental and quasi-experimental designs being the most frequently employed to examine the effectiveness of AI-supported language learning. In contrast, qualitative investigations and longitudinal studies were relatively scarce, suggesting that the long-term impact of AI integration on language development and classroom practices has not yet been sufficiently explored (Lo et al., 2024).

ChatGPT emerged as the most widely investigated AI application, followed by Grammarly, ELSA Speak, SpeechAce, Gemini, and Claude. While early studies mainly examined AI-assisted writing, more recent research has expanded to speaking, reading, pronunciation, vocabulary learning, automated feedback, and assessment. This shift indicates that generative AI is gradually evolving from a writing support tool into a comprehensive learning assistant capable of supporting multiple dimensions of university EFL education.

Overall, the reviewed studies demonstrate a clear transition from exploring the feasibility of AI applications to investigating their pedagogical effectiveness and responsible implementation. Despite the diversity of AI tools and research contexts, most studies consistently reported positive educational outcomes while emphasizing the importance of teacher mediation, AI literacy, and ethical considerations for sustainable AI integration (Kasneci et al., 2023; UNESCO, 2023).

Table 1. Characteristics and Main Findings of Reviewed Studies on Generative AI in University EFL Education (2023–2025)

Authors	Country	Participants	AI Tool(s)	Research Design	Key Findings
Kasneci et al. (2023)	Germany	—	ChatGPT (LLMs)	Perspective Review	Discussed opportunities and challenges of LLMs in education, highlighting pedagogical potential and ethical concerns.
Dwivedi et al. (2023)	International	—	ChatGPT	Multidisciplinary Review	Identified educational opportunities together with issues of academic integrity, bias, privacy, and governance.
UNESCO (2023)	International	—	Generative AI	Policy Report	Proposed principles for the responsible and ethical use of generative AI in education and research.
Lo et al. (2024)	International	70 empirical studies	ChatGPT	Systematic Review	Found that writing dominated AI-related EFL research, while speaking and reading remained underrepresented.
Kohnke et al. (2024)	International	—	Generative AI	Review	Reported that generative AI supports personalized learning, feedback, and learner autonomy in language education.
Yan (2023)	China	University EFL students	ChatGPT	Experimental	AI-assisted writing significantly improved students' writing quality and revision strategies.

Ali et al. (2024)	Saudi Arabia	University students	ChatGPT	Mixed Methods	Students reported positive perceptions of AI-supported English learning but emphasized the need for teacher guidance.
Lee & Choi (2024)	South Korea	University EFL students	ChatGPT	Mixed Methods	ChatGPT was mainly used for brainstorming, drafting, and revising academic writing.
Carrier et al. (2024)	South Korea	University students	ChatGPT	Survey	AI reduced writing anxiety and increased learners' confidence and motivation.
Üstünbaş (2024)	Türkiye	University EFL students	ChatGPT	Qualitative Case Study	Students valued conversational AI for speaking practice and autonomous learning.
Nhu (2024)	Vietnam	University EFL students	ChatGPT	Quasi-experimental	AI-supported speaking practice improved fluency, pronunciation, and communicative confidence.
Sholekhah & Fakhrurriana (2023)	Indonesia	EFL learners	ELSA Speak	Experimental	AI-powered pronunciation feedback enhanced learners' pronunciation accuracy.
Al-Jarf (2025)	Jordan	University students	ELSA Speak	Experimental	AI-assisted speaking applications improved pronunciation, fluency, and oral performance.
Wang et al. (2024)	China	University EFL students	Grammarly & ChatGPT	Mixed Methods	AI-supported feedback enhanced writing quality but raised concerns about overreliance on AI.
Chen et al. (2025)	China	University students	ChatGPT & Gemini	Mixed Methods	Highlighted the importance of AI literacy, critical thinking, and responsible AI use for sustainable learning.

As presented in Table 1, most studies were conducted in Asian countries, particularly China, South Korea, Vietnam, Saudi Arabia, and Malaysia, reflecting the increasing interest in AI-supported English language education across the region. Undergraduate students constituted the dominant participant group, whereas comparatively fewer studies investigated teachers' perspectives or classroom implementation.

Regarding research methodology, quantitative and mixed-methods approaches were the most frequently employed. Experimental and quasi-experimental designs predominated, aiming to evaluate the effectiveness of AI-assisted learning on students' language performance. By contrast, qualitative investigations and longitudinal studies remained relatively limited, indicating the need for more in-depth exploration of learners' experiences and the long-term educational impact of AI integration (Lo et al., 2024).

ChatGPT emerged as the most frequently investigated AI application, followed by Grammarly, Gemini, ELSA Speak, SpeechAce, and Claude. While writing remained the most extensively researched language skill, recent studies have gradually expanded to include speaking, reading, vocabulary learning, pronunciation training, formative assessment, and AI-mediated feedback. This diversification suggests that AI applications are no longer confined to writing support but are increasingly integrated across multiple aspects of university EFL instruction.

3.3 Summary of the Current Research Landscape

Three major characteristics emerged from the reviewed literature. First, research on generative AI in university EFL education has grown rapidly over the past three years, reflecting the widespread adoption of AI technologies in higher education. Second, empirical studies have predominantly focused on students' learning outcomes, perceptions, and writing performance, whereas teacher-related issues and institutional implementation remain comparatively underexplored. Third, despite the generally positive findings regarding AI-enhanced language learning, researchers consistently emphasize that effective AI integration depends not only on technological capability but also on appropriate pedagogical design, teacher mediation, ethical awareness, and institutional support (Kasneci et al., 2023; Lo et al., 2024; UNESCO, 2023).

Overall, the current research landscape demonstrates a transition from exploring the educational potential of generative AI to examining how AI can be integrated responsibly and effectively into university EFL teaching and learning. These developments

provide the foundation for the following section, which critically synthesizes the major findings emerging from the reviewed studies.

4. MAJOR RESEARCH FINDINGS

4.1. Educational Benefits of Generative AI

The reviewed studies consistently demonstrate that generative AI has a positive impact on university EFL learning. AI-powered tools such as ChatGPT, Grammarly, ELSA Speak, and SpeechAce provide immediate feedback, personalized learning support, and flexible practice opportunities, thereby enhancing students' writing, speaking, vocabulary learning, and overall language performance (Lo et al., 2024; Yan, 2023; Nhu, 2024). In addition to improving language skills, AI has been found to increase learner engagement, motivation, and confidence by enabling students to practise independently and receive timely feedback (Carrier et al., 2024; Kohnke et al., 2024). These findings suggest that generative AI can effectively complement traditional EFL instruction when integrated into well-designed learning activities.

4.2. Changing Roles of Learners and Teachers

Another major finding concerns the transformation of teaching and learning practices. The reviewed studies indicate that AI promotes learner autonomy by encouraging self-directed learning, self-regulation, and continuous language practice beyond the classroom. At the same time, teachers' roles are shifting from knowledge providers to learning facilitators who guide students in using AI critically and responsibly. Rather than replacing teachers, AI requires greater teacher involvement in designing learning tasks, interpreting AI-generated feedback, and developing students' AI literacy (Kasneci et al., 2023; UNESCO, 2023; Lo et al., 2024).

4.3. Challenges and Future Considerations

Despite its educational benefits, the reviewed literature highlights several persistent challenges. The most frequently reported issues include academic integrity, inaccurate or hallucinated AI-generated content, excessive learner dependence on AI, and insufficient AI literacy among both teachers and students (Dwivedi et al., 2023; Kasneci et al., 2023). In addition, many universities still lack clear institutional policies and professional development programs to support responsible AI integration. Overall, the reviewed studies emphasize that the effectiveness of generative AI depends not only on technological advancement but also on appropriate pedagogical design, ethical awareness, and institutional support.

5. RESEARCH GAPS AND FUTURE DIRECTIONS

Despite the growing body of research on generative AI in university EFL education, several important research gaps remain. First, existing studies have focused predominantly on ChatGPT, while other emerging AI applications, such as Gemini, Claude, and Copilot, have received comparatively limited scholarly attention. Broader comparisons among different AI tools are therefore needed to better understand their pedagogical affordances and limitations.

Second, current research has concentrated mainly on writing instruction and students' perceptions. Other language skills, including listening, reading, and intercultural communication, as well as teacher professional development and AI-supported curriculum design, remain underexplored. Future studies should adopt a more comprehensive perspective on AI integration across different aspects of university EFL education.

Third, most empirical studies have employed quantitative or short-term experimental designs. Longitudinal, qualitative, and classroom-based research is still limited, making it difficult to determine the long-term impact of AI on language development, learner autonomy, and teaching practices. More evidence from authentic educational settings is required to evaluate the sustainability of AI-supported learning.

Finally, while many studies have reported positive educational outcomes, relatively few have examined responsible AI implementation from ethical, institutional, and policy perspectives. Issues such as academic integrity, AI literacy, data privacy, assessment practices, and institutional governance deserve greater scholarly attention as universities increasingly integrate generative AI into teaching and learning.

Future research should therefore move beyond evaluating the effectiveness of individual AI tools toward investigating sustainable, ethical, and pedagogically sound AI integration. Interdisciplinary collaboration among language educators, educational technologists, and policy makers will be essential to develop evidence-based practices that maximize the educational benefits of generative AI while addressing its associated challenges.

6. PEDAGOGICAL IMPLICATIONS

The findings of this review suggest that generative AI has considerable potential to enhance university EFL teaching and learning when integrated through appropriate pedagogical practices. Rather than functioning as a substitute for teachers, AI should be used as a complementary learning tool that supports personalized feedback, learner autonomy, and meaningful language practice. To

maximize its educational benefits, instructors should design AI-assisted learning activities that promote critical thinking, problem-solving, and responsible AI use instead of relying solely on AI-generated responses. At the institutional level, universities should provide clear guidelines on ethical AI use, strengthen AI literacy for both teachers and students, and incorporate AI-related competencies into EFL curricula. Such initiatives will help ensure that generative AI is implemented in ways that improve learning outcomes while maintaining academic integrity and supporting sustainable language education (UNESCO, 2023; Kasneci et al., 2023; Lo et al., 2024).

7. CONCLUSION

This review synthesized recent studies on the application of generative artificial intelligence in university EFL education published between 2023 and 2025. The reviewed literature indicates that generative AI has become an increasingly important tool for supporting language learning through personalized feedback, learner autonomy, and enhanced engagement. At the same time, the findings highlight persistent challenges related to academic integrity, AI literacy, ethical concerns, and institutional readiness. Although the existing evidence generally supports the educational value of generative AI, its successful integration depends on appropriate pedagogical design, responsible use, and effective teacher mediation rather than technological capability alone.

The review also identified several research gaps, including the limited diversity of AI applications investigated, the predominance of short-term quantitative studies, and the need for more research on teacher development and sustainable classroom implementation. As generative AI continues to evolve, future research should adopt more comprehensive and longitudinal approaches to better understand its long-term impact on language learning and teaching. Overall, generative AI should be regarded as a complementary educational resource that supports, rather than replaces, human interaction and pedagogical expertise in university EFL education.

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