Use of artificial intelligence in teaching english in higher education: A state-of-the-art review

Uso de la inteligencia artificial en la enseñanza del inglés en la educación superior: Una revisión de última hora

https://doi.org/10.5281/zenodo.19596179

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Fecha de recepción: 19 / 10 / 2025
Fecha de aceptación: 21 / 12 / 2025

RESUMEN

La educación superior ha experimentado cambios significativos como resultado del crecimiento explosivo de la inteligencia artificial (IA), especialmente en el área de la enseñanza del inglés (ELT). Este artículo ofrece una revisión de vanguardia de la

investigación reciente sobre la aplicación pedagógica de la inteligencia artificial en la enseñanza del inglés a nivel universitario, en respuesta al creciente volumen de investigación y al desarrollo de tecnologías de IA generativa. El presente estudio utilizo un enfoque de revisión cualitativa, en el cual se analizó 45 artículos que han sido revisados por pares y obtenidos de relevantes bases de datos académicas como son: Scopus, Web of Science, ERIC y Google Scholar. Dichos artículos fueron publicados entre los años 2023 y 2025. Entre los hallazgos más relevantes podemos mencionar tendencias repetitivas del uso de herramientas de IA en las clases, habilidades lingüísticas que se abordan con mayor frecuencia y los métodos pedagógicos que respaldan la incorporación de la IA en las aulas de clase. Por otra parte se evidencia que los sistemas de reconocimiento de voz, las plataformas de aprendizaje adaptativo, los modelos lingüísticos grandes y los chatbots conversacionales son las tecnologías más populares, con un énfasis significativo en las capacidades orales y escritas. Según los estudios revisados, los factores más importantes que definen la efectividad de la IA como instrumento de enseñanza son: la implementación ética, la mediación activa de los docentes y la alineación con marcos comunicativos, socioculturales y constructivistas. La revisión literaria también subraya los problemas con la integridad académica, la privacidad de datos, el sesgo algorítmico y la equidad de acceso, además de las lagunas en la investigación, tales como una falta de estudios longitudinales y contextuales en el ámbito educativo superior del Sur Global. La conclusión principal del artículo señala que en la enseñanza del inglés como lengua extranjera (ELT), la inteligencia artificial solo se reconoce como una innovación pedagógica importante si está fundamentada en la teoría, cuenta con una base ética y se enfoca en promover el desarrollo de la capacidad comunicativa y la independencia del alumno.

Palabras clave: *IA, IA generativa, innovación pedagógica, enseñanza del inglés, educación superior, revisiones de vanguardia.*

ABSTRACT

Higher education has seen significant changes as a result of artificial intelligence's (AI) explosive growth, especially in the area of English language teaching (ELT). This article

offers a cutting-edge review of recent research on the pedagogical application of artificial intelligence in university-level English instruction in response to the increasing amount of research and the development of generative AI technologies. Using a qualitative review methodology, the study examines 45 peer-reviewed articles that were retrieved from major academic databases such as Scopus, Web of Science, ERIC, and Google Scholar and published between 2023 and 2025. The results show recurring trends in the kinds of AI tools used, the language skills that are most commonly addressed, and the pedagogical strategies that support AI integration. With a strong emphasis on writing and speaking abilities, the most popular technologies are large language models, conversational chatbots, speech recognition systems, and adaptive learning platforms. According to the reviewed literature, active teacher mediation, ethical implementation, and alignment with constructivist, sociocultural, and communicative frameworks are the main factors that determine how effective AI is as a teaching tool. Along with ongoing research gaps, such as the dearth of longitudinal and context-sensitive studies in Global South higher education contexts, the review also highlights significant issues with academic integrity, data privacy, algorithmic bias, and equity of access. The article's overall conclusion is that artificial intelligence only qualifies as significant pedagogical innovation in ELT when it is theory-driven, ethically grounded, and focused on the development of communicative competence and learner autonomy.

Keywords: *AI, generative AI, pedagogical innovation, English language instruction, higher education, state-of-the-art reviews.*

INTRODUCTION

The explosive development of AI technologies has significantly impacted modern higher education systems. Universities across the globe are following suit by the implementation of AI-powered tools that not only improve teaching efficiency and personalize learning but also address the increasing need for digital transformation sound bites. The role of AI in ELT

is especially prominent as institutions look for new ways to overcome long standing issues concerning student engagement, communicative competence, and heterogeneous skill levels.

Large class sizes, limited classroom exposure, and a lack of opportunities for real-world language practice are some of the challenges that English as a Foreign Language (EFL) instruction in higher education frequently faces. By enabling adaptive instruction, instant feedback, and simulated communicative environments outside of the traditional classroom, AI-based tools open up new pedagogical opportunities. According to recent research, AI should be viewed as a catalyst for pedagogical innovation that transforms instructional design, assessment, and the roles of teachers and students rather than just as a technological advancement.

A state-of-the-art review focusing on recent literature is necessary because of the rapid growth of publications on AI in education, especially after the emergence of generative AI models. With an emphasis on pedagogical strategies and advanced teaching methods, this article attempts to summarize recent studies on the application of artificial intelligence in English instruction in higher education that were published between 2023 and 2025.

METODOLOGY

In order to investigate current empirical and theoretical developments on the application of artificial intelligence in English language instruction in higher education settings, this study uses a qualitative literature review methodology. Using descriptors pertaining to generative language technology, EFL, and artificial intelligence, relevant studies were found through a focused search. The search was limited to peer-reviewed journal articles published between 2023 and 2025 and was carried out across major academic databases, such as Scopus, Web of Science, ERIC, and Google Scholar.

The following criteria were used for inclusion: (a) publications written in English; (b) empirical or theoretical research with clear pedagogical implications; and (c) studies addressing AI applications in university-level English teaching. Conference abstracts without full texts, opinion pieces without academic support, and studies unrelated to ELT were among the exclusion criteria.

62 articles were found in the initial corpus. After eliminating duplicates and applying inclusion and exclusion criteria, 45 studies were selected for in-depth analysis. The main themes of the thematic analysis of the selected literature were types of artificial intelligence applications, target language skills, pedagogical systems, reported learning outcomes and identified problems.

THEORETICAL FRAMEWORK

According to Chan (2025) the pedagogical integration of AI in ELT is based on constructivist and sociocultural learning theories, which emphasize learner-centeredness, interaction, and scaffolding. AI-supported learning environments, which provide chances for meaningful language use, individualized learning routes, and adaptive feedback, support these concepts (Lal, Nagariya & Siddh, 2025). Recent interpretations of these theories within digital pedagogy emphasize the function of AI in mediating learning processes and encouraging self-regulated learning.

Learner autonomy is a central concept in AI-enhanced ELT. Large language models and intelligent tutoring systems allow students to plan, track, and assess their own learning. According to Kasneci et al. (2023), generative AI tools can improve academic writing abilities and metacognitive awareness when used appropriately. AI-powered chatbots and simulations facilitate real-world communication and lessen oral production anxiety from the standpoint of communicative language instruction.

Academics stress that AI should support human education rather than take its place. In order to guarantee that AI tools significantly improve learning outcomes, Zawacki-Richter et al. (2024) emphasize the significance of pedagogical alignment and teacher mediation. Three

significant review contributions explain how AI should be framed as pedagogical innovation in order to bolster this framework with evidence from reviews.

Zawacki-Richter, Marín, Bond & Gouverneur (2019) provide a thorough analysis of the literature on AI applications in higher education. Their synthesis argues for stronger pedagogical underpinnings, such as rigorous evaluation designs, explicit learning theories, and attention to instructional integration, and shows that a significant amount of the field has been driven by technology. This implies that the use of AI for ELT in higher education should be assessed in terms of coherent instructional goals (e.g., communicative outcomes, formative feedback, autonomy) rather than just rapid performance increases.

The advantages of writing, feedback, tutoring-like engagement, and support for self-regulated learning were noted by Kasneci et al. (2023) in their study and critical analysis of large language models in education, such as ChatGPT, while cautioning against hallucinations, bias, overreliance, and threats to academic integrity. A crucial part of students' education is scaffolding that encourages metacognitive monitoring and critical assessment of AI outputs, as well as their ethical and transparent use.

Three paradigms of AI in education are described by Ouyang and Jiao's (2023) conceptual, review-informed framework: AI-directed, AI-supported, and AI-empowered. This paradigm lens aids in placing ELT implementations along a spectrum that includes automation and efficiency, instruction augmentation, and, in the end, learner empowerment and agency. Because it emphasizes that the most educationally beneficial implementations are those that enhance agency, interaction, and self-regulation rather than merely automating tasks, the model directly aligns with innovation in practices.

The present study's position is supported by these review-based contributions: AI becomes pedagogical innovation in higher education ELT when it is grounded in learning theory, applied with teacher mediation and scaffolding, and focused on learner agency, ethical practice, and communicative competence.

Table 1.

Comparative analysis table of the integrated review sources

Review source	Type of review	Scope	Primary focus	Key pedagogical insights	Implications for ELT in Higher Education	Gaps / Limitations identified
Zawacki-Richter et al. (2019)	Systematic literature review	Artificial intelligence in higher education (global, multidisciplinary)	Classification of AI applications in HE (teaching & learning, student support, administrative uses)	Emphasizes the need for stronger pedagogical grounding, explicit learning theories, and rigorous research designs; warns against technology-driven adoption without instructional alignment	AI in ELT should be integrated as part of instructional design (e.g., feedback, autonomy, communicative competence) rather than as isolated tools; evaluation should go beyond short-term performance gains	Limited longitudinal studies; insufficient pedagogical theorization; uneven methodological rigor across studies
Kasneci et al. (2023)	Narrative review and critical analysis	Large Language Models (LLMs) in education (cross-disciplinary)	Opportunities and risks of generative AI (e.g., ChatGPT) for learning and teaching	Highlights the pedagogical value of LLMs for drafting, feedback, tutoring-like interaction, and self-regulated learning, while stressing the importance	In ELT, LLMs can support academic writing, discourse practice, and reflective learning when guided by rubrics, teacher mediation, and AI	Lack of classroom-based empirical studies; limited evidence from diverse educational contexts, especially the Global South

Review source	Type of review	Scope	Primary focus	Key pedagogical insights	Implications for ELT in Higher Education	Gaps / Limitations identified
				of scaffolding, metacognition, and ethical awareness	literacy instruction	
Ouyang & Jiao (2023)	Conceptual review / theoretical framework	Artificial intelligence in education (pedagogical paradigms)	Three paradigms of AI use: AI-directed, AI-supported, and AI-empowered	Argues that pedagogical innovation increases as AI shifts from automation to learner empowerment, agency, and self-regulation	Provides a lens to design ELT practices that move from efficiency-oriented AI use to communicative, learner-centered, and autonomy-enhancing models	Need for operational definitions and measurement of "AI empowerment"; challenges related to equity and accessibility

A common finding among the reviewed literature is highlighted by the comparative synthesis above: artificial intelligence only qualifies as pedagogical innovation in higher education when it is purposefully integrated with learner-centered principles, instructional design, and learning theories. While Kasneci et al. (2023) emphasize the significance of scaffolding, ethical use, and metacognitive regulation in AI-supported learning environments, Zawacki-Richter et al. (2019) stress the need to move beyond technology-driven adoption toward pedagogically grounded implementation.

Furthermore, the paradigmatic framework of Ouyang and Jiao (2023) provides a lens through which to examine AI integration along a continuum from learner empowerment to

automation. Building on these theoretical and review-based insights, the following part examines real-world applications of AI in English as a Foreign Language (EFL) instruction in higher education. It focuses on how certain AI technologies operationalize instructional ideas including personalization, learner autonomy, and the development of communicative competence.

APPLICATIONS OF AI IN EFL

Several prominent AI applications in higher education ELT have been identified by recent studies. Large language models are frequently used to help with discourse organization, vocabulary growth, and academic writing. When combined with clear instructional guidance, AI-assisted writing tools increase lexical variety and grammatical accuracy, according to research by Creely (2024).

By offering prompt remedial feedback, speech recognition and pronunciation tools improve oral proficiency. Low-stakes speaking practice is made possible by conversational chatbots, which improve fluency and lower anxiety (Chan, 2025). Learning analytics are used by adaptive learning platforms to tailor instruction to each learner's needs and pace.

Despite these benefits, worries about an excessive reliance on content produced by AI and the possible deterioration of critical thinking abilities still exist. In order to reduce these risks, the literature emphasizes the need for pedagogical scaffolding.

PEDAGOGICAL INNOVATION

Significant pedagogical innovation in higher education ELT has been fueled by AI integration. Flexible, learner-centered methods backed by ongoing formative assessment are replacing teacher-centered models in instructional practices. With the help of automated feedback systems, teachers can better track students' progress and adjust their lesson plans.

Project-based learning helped by AI tools, blended and hybrid learning models, and data-driven instructional decision-making are examples of novel techniques. Ouyang and Jiao (2023) claim that AI-enhanced teaching can promote inclusion by supporting a range of

learning styles if accessibility and equity concerns are taken into consideration. It has been repeatedly shown that teacher professional development is essential to successful AI integration. Due to a lack of adequate pedagogical training, AI tools' instructional potential is still underutilized (Netragaonkar, 2024).

RESULTS

Consistent patterns regarding the pedagogical application of artificial intelligence in English language teaching (ELT) within higher education are revealed by the analysis of the 45 peer-reviewed studies chosen for this state-of-the-art review. According to the qualitative review methodology used, the results summarize trends, thematic categories, and recurrent findings found throughout the reviewed literature rather than providing empirical measurements.

1. General characteristics of the reviewed studies.

With a noticeable rise in publications after the advent of generative AI technologies, the reviewed studies primarily concentrate on the pedagogical application of AI-based tools in university-level ELT contexts. The majority of research is conducted in higher education settings and focuses on instructional strategies for assessment, learner support, and language skill development.

Table 3.

General characteristics of the reviewed studies

Analytical criterion	Observed trend
Educational level	Higher education (undergraduate and postgraduate)
Publication period	Concentration between 2023 and 2025
Research focus	Pedagogical use of AI in ELT
Methodological orientation	Qualitative, mixed-methods, and review-based studies
Main research emphasis	Teaching–learning processes rather than administrative AI uses

2. The most popular AI tools found in ELT studies

The findings show that some types of AI tools are more often studied in ELT studies. The most popular technologies are conversational agents and large language models, which are followed by speech recognition software and platforms for adaptive learning.

Table 4.

AI tool categories identified in the reviewed literature

AI tool category	Main pedagogical function	Frequency in reviewed studies
Large Language Models (LLMs)	Academic writing support, feedback, discourse modeling	High
Conversational chatbots	Speaking practice, interaction, anxiety reduction	High

AI tool category	Main pedagogical function	Frequency in reviewed studies
Speech recognition tools	Pronunciation and fluency feedback	Moderate
Adaptive learning platforms	Personalized instruction and pacing	Moderate
Automated assessment systems	Formative feedback and progress tracking	Low–Moderate

3. Aspects of learning and language competency were examined.

Research clearly focuses on certain linguistic skills. The bulk of studies concentrate on speaking and writing skills; integrated skill development, listening, and reading are less often studied.

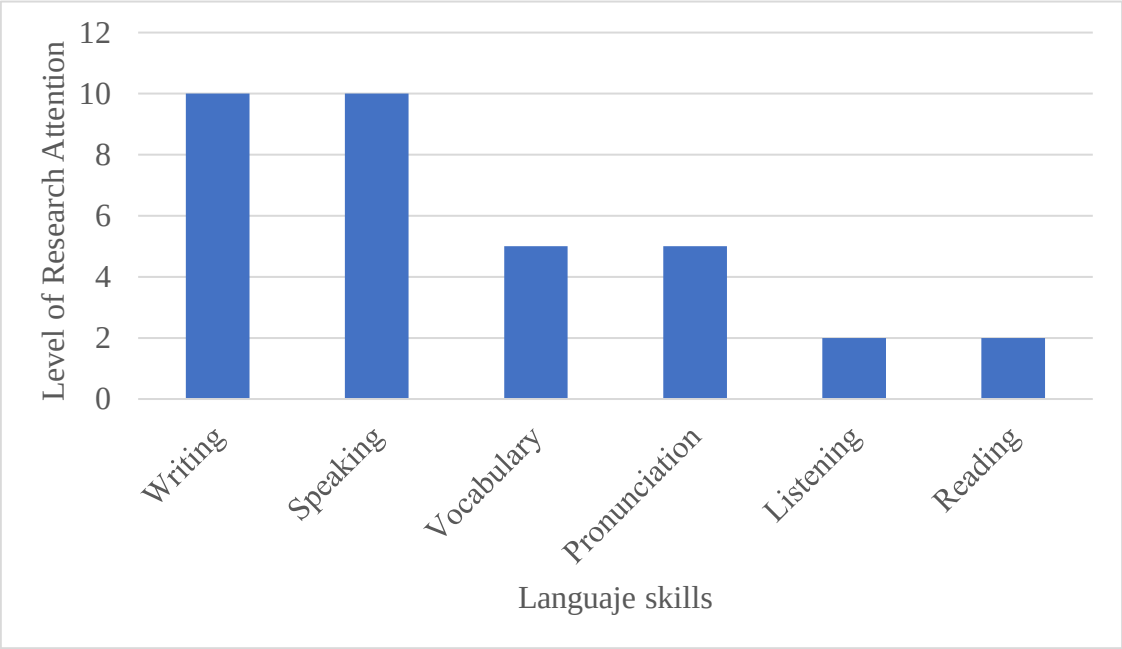
Table 6.

Language skills targeted by AI-based ELT studies

Language skill / dimension	Level of research attention
Writing (academic and general)	High
Speaking and oral fluency	High
Vocabulary development	Moderate
Pronunciation	Moderate
Listening and reading	Low
Integrated communicative competence	Emerging

Figure 1.

Focus of AI-Based ELT Research by Language Skill



Note: A qualitative depiction of the degree of study focus on various language skills in AI-supported ELT papers reviewed between 2023 and 2025 is shown in the picture.

As shown in Figure 2, research on AI-based ELT predominantly concentrates on productive skills such as writing and speaking, while receptive skills, particularly listening and reading, receive comparatively less attention.

4. Pedagogical strategies related to the integration of AI

AI tools are most commonly integrated into learner-centered pedagogical approaches, according to the reviewed literature. Constructivist, sociocultural, and communicative frameworks predominate, especially when AI is applied to foster learner autonomy, interaction, and feedback.

Table 7.

Pedagogical approaches linked to AI use in ELT

Pedagogical approach	AI-supported instructional focus
Constructivist learning	Knowledge construction through feedback and interaction
Sociocultural theory	Scaffolding, mediation, and collaborative learning
Communicative Language Teaching	Authentic interaction and communicative competence
Learner autonomy frameworks	Self-regulated and personalized learning
Technology-enhanced learning	Blended and hybrid instructional models

Table 5.

Pedagogical alignment between artificial intelligence tools and instructional approaches in higher education ELT

AI Tool	Constructivist	Communicative	Autonomy	Assessment
LLMs	✓	✓	✓	✓
Chatbots	✓	✓✓	✓	X
Speech Recognition	X	✓	X	✓
Adaptive Platforms	✓	X	✓✓	✓

Note: Table 5 presents a pedagogical matrix that synthesizes the relationship between commonly used artificial intelligence tools in English language teaching and the instructional approaches in which they are most frequently embedded, based on the reviewed literature.

Table 5 shows the pedagogical alignment found in all of the evaluated research, emphasizing how various AI tools typically support particular teaching strategies for English language instruction in higher education. Large language models and conversational chatbots are primarily linked to constructivist and communicative frameworks, especially in tasks including feedback, interaction, and learner autonomy, according to the matrix.

On the other hand, assessment-oriented and personalization-focused approaches are more often associated with voice recognition systems and adaptive learning platforms. This synthesis supports the idea that, rather than the technology themselves, the pedagogical influence of AI depends on how tools are incorporated into instructional designs.

5. Benefits and difficulties mentioned in the literature

AI-based educational tools are consistently linked to pedagogical benefits across the reviewed studies, but there are also notable challenges.

Table 8.

Reported benefits and challenges of AI in ELT

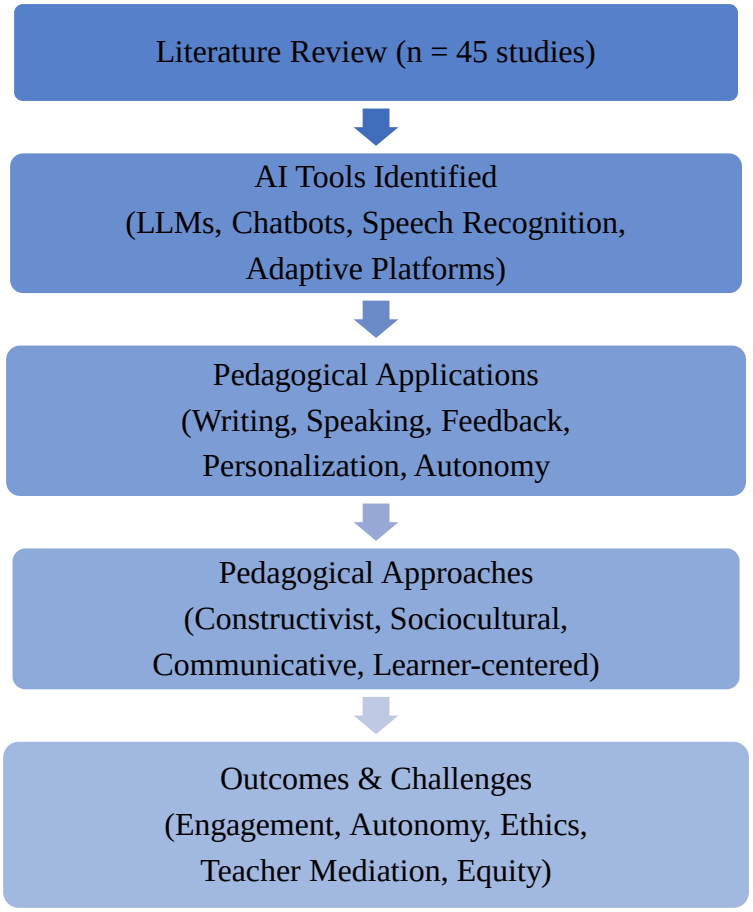
Dimension	Key findings
Reported benefits	Increased learner engagement; personalized instruction; improved opportunities for feedback and practice
Pedagogical challenges	Risk of overreliance on AI-generated content; reduced critical engagement
Ethical challenges	Data privacy, algorithmic bias, academic integrity
Contextual challenges	Unequal access to digital infrastructure; limited teacher training

6. Research gaps were identified

Finally, the findings point to significant gaps in the body of current literature. There are still few longitudinal studies conducted in classrooms, and affective factors like learner perceptions, motivation, and anxiety are not well studied. There is also a dearth of context-sensitive research, especially in higher education settings in the Global South.

igure 2.

Conceptual synthesis of AI-based pedagogical integration in English language teaching.



Note: The figure 2 gives a visual synthesis of the main findings of the review, illustrating the pedagogical pathway by which artificial intelligence enhances English language instruction in higher education.

From the analyzed corpus to AI technologies, pedagogical functions, instructional methodologies, and the ensuing educational outcomes and obstacles in higher education ELT, the figure depicts the path found in the evaluated research.

DISCUSSION

The examined literature indicates that artificial intelligence is a powerful motivator for educational innovation in higher education ELT. AI boosts efficiency, student engagement, and personalization, but its usefulness is primarily based on instructional design and moral application. Academic integrity, algorithmic prejudice, and data privacy are major ethical challenges (UNESCO, 2023). Ouyang & Jiao (2023) claim that institutions must develop clear policies and ethical frameworks to guide the use of AI in education. Equity concerns must also be addressed in order to prevent digital disparities between institutions and students. The discussion highlights how important it is to view AI as a pedagogical ally that supplements rather than replaces human education (Netragaonkar, 2024).

The results of the studied literature confirm that artificial intelligence has a major impact on pedagogical advances in English language teaching (ELT) in higher education. Studies published between 2023 and 2025 have connected AI-based educational technologies to improved chances for communicative practice, tailored instruction, and higher student engagement (Creely, 2024; Chan, 2025; Crompton & Burke, 2023). However, rather than the technology itself, instructional design, teacher delivery, and ethical implementation play a major role in the pedagogical success of these tools.

According to Zawacki-Richter et al. (2019) and Crompton & Burke (2023) many AI implementations in higher education are still driven more by automation and efficiency than by explicit learning theories. However, more recent research emphasizes the importance of integrating AI tools with constructivist, sociocultural, and communicative approaches in order to promote meaningful learning experiences (Kasneci et al., 2023; Ouyang & Jiao,

2023). In ELT, where interaction, feedback, and learner autonomy are crucial to the development of communicative competence.

Large language models and other generative AI tools are becoming a major topic of discussion. Research shows that they can help with academic writing, discourse organization, and self-regulated learning (Creely, 2024; Kasneci et al., 2023), but it also raises questions about over-reliance, diminished critical thinking, and risks to academic integrity. These results imply that rather than replacing student effort or teacher feedback, generative AI should be incorporated as a scaffolded learning resource. To reduce these risks, the literature repeatedly emphasizes the necessity of explicit pedagogical guidance, reflective tasks, and AI literacy instruction.

Ethical considerations are another crucial subject in the discussion. Equity, transparency, algorithmic bias, and data privacy are acknowledged concerns (UNESCO, 2023; Holmes et al., 2022; Lal et al., 2025). From an ELT approach, these concerns are especially critical in settings like institutions in the Global South that have unequal access to digital infrastructure. The examined papers stress that responsible AI integration requires ethical frameworks, institutional policies, and professional development programs that empower educators to make informed pedagogical judgments.

Furthermore, the argument emphasizes persistent research gaps. Despite the increasing amount of studies on AI in education, longitudinal, classroom-based research investigating sustained learning results is still missing, especially in language education environments (Zawacki-Richter et al., 2019; Kasneci et al., 2023). Additionally, nothing is known regarding context-sensitive implementations, affective aspects, and learner perceptions. These gaps need to be resolved in order to promote a more sophisticated and empirically validated view of AI as pedagogical innovation in higher education ELT.

Table 2.

Methodological Synthesis of the Discussion

Analytical dimension	**Key discussion focus**	**Supporting sources**	**Implications for ELT in higher education**
Pedagogical alignment	AI effectiveness depends on alignment with learning theories and instructional design rather than technological novelty	Zawacki-Richter et al. (2019); Crompton & Burke (2023); Ouyang & Jiao (2023)	AI tools should be embedded in communicative, learner-centered pedagogies
Learner engagement and autonomy	AI supports personalization, self-regulation, and increased engagement when scaffolded	Kasneci et al. (2023); Creely (2024)	Design tasks that promote reflection, feedback use, and learner agency
Generative AI in ELT	Benefits for writing, discourse, and feedback coexist with risks of overreliance and reduced critical thinking	Kasneci et al. (2023); Creely (2024)	Integrate LLMs with rubrics, reflective activities, and teacher mediation
Ethical and equity concerns	Data privacy, bias, transparency, and access disparities remain unresolved	UNESCO (2023); Holmes et al. (2022); Lal et al. (2025)	Develop institutional policies and ethical guidelines for AI use
Research gaps	Limited longitudinal and context-sensitive empirical evidence	Zawacki-Richter et al. (2019); Kasneci et al. (2023)	Need for long-term, classroom-based ELT studies, especially in Global South contexts

CONCLUSIONS

This cutting-edge analysis demonstrates how artificial intelligence has solidified its position as a major force behind pedagogical innovation in English language teaching (ELT) in higher education settings. When AI-based educational tools are integrated with sound pedagogical principles rather than technological determinism, they can significantly improve learner engagement, personalized instruction, communicative competence development, and learner autonomy, according to an analysis of recent literature published between 2023 and 2025.

The results demonstrate that the educational value of artificial intelligence lies in the instructional frameworks that these tools are integrated into, not in the tools themselves. Research continuously highlights how crucial it is to match AI applications with constructivist, sociocultural, and communicative approaches in addition to making sure that teachers actively mediate and provide pedagogical scaffolding. In this sense, when applied critically and morally, large language models, conversational agents, and adaptive learning systems become effective tools for fostering interaction, feedback, and self-regulated learning.

Furthermore, the review emphasizes that ethical concerns such as data privacy, algorithmic bias, academic integrity, and equity of access are essential prerequisites for responsible AI integration in higher education ELT rather than incidental problems. Therefore, in order to avoid shallow or unfair implementations, institutional policies, ethical frameworks, and ongoing professional development for educators are crucial.

There are still a lot of unanswered questions despite the expanding body of research. The literature shows that, especially in Global South settings, there is a dearth of long-term, classroom-based studies that look at sustained learning outcomes as well as little investigation of learner perceptions, affective variables, and context-sensitive applications. In order to advance a more complex and empirically supported understanding of artificial intelligence as a pedagogical innovation, it is imperative that these gaps be filled.

In conclusion, rather than being seen as a replacement for human instruction, artificial intelligence should be seen as a pedagogical ally that, when correctly incorporated, has the potential to change English language learning in higher education. Future research should concentrate on theory-driven, morally sound, and contextually sensitive approaches to optimize AI's impact on inclusive and meaningful language learning experiences.

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