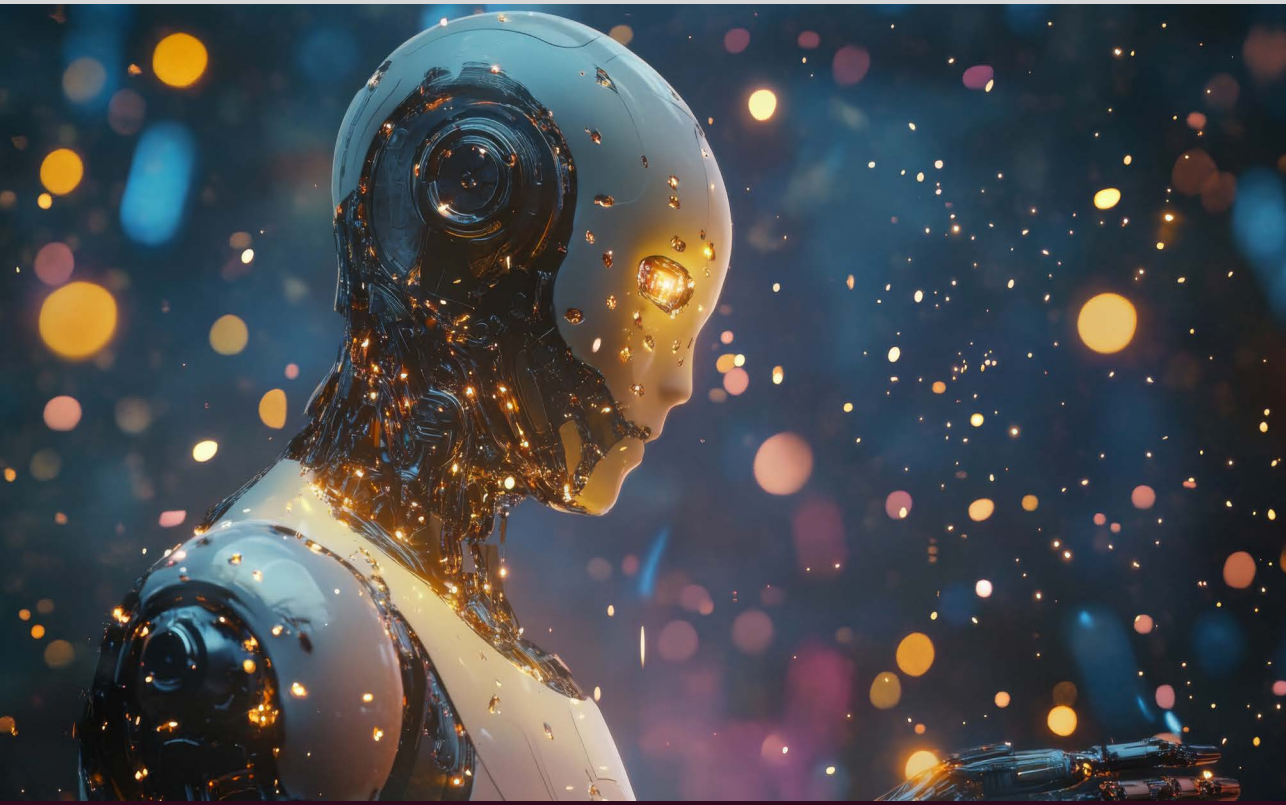

Beyond the Blackboard: Exploring AI-Driven Transformations in EFL Pedagogy

Más allá del pizarrón: Explorando las transformaciones impulsadas por la inteligencia artificial en la pedagogía del inglés como lengua extranjera

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Fuente: https://www.freepik.es/vectores#from_elemen

ABSTRACT

This paper examines how Artificial Intelligence (AI) is being integrated into EFL teaching, offering insights into its educational implications and contributing to the broader conversation on AI in Education (AIEd). This review synthesizes findings from 30 peer-reviewed studies published between 2020 and 2025. Drawing from empirical research and theoretical frameworks, this study identifies key pedagogical transformations driven by AI, particularly in enhancing learner engagement, motivation, and personalized instruction. The analysis adopts a critical and equity-oriented stance, highlighting underexplored issues such as algorithmic bias, unequal access to digital infrastructure, and the diminishing professional agency of teachers. The review also interrogates the cognitive and ethical implications of AI use, including concerns about over-reliance on automated tools and erosion of academic integrity. Despite its contributions, the study is limited by its focus on English-language sources and the lack of longitudinal data in the reviewed literature. These constraints underscore the need for future research that is culturally responsive, context-sensitive, and grounded in interdisciplinary collaboration. The review offers a forward-looking synthesis, advocating for reflective, ethically guided implementation of AI in language education to promote both innovation and educational equity.

Keywords: Artificial Intelligence (AI), cognition, information society, innovation, teaching practice

RESUMEN

Este artículo examina cómo se está integrando la inteligencia artificial (IA) en la enseñanza del inglés como lengua extranjera (EFL), ofrece perspectivas sobre sus implicaciones educativas y contribuye a la conversación más amplia sobre la inteligencia artificial en la educación (AIEd). Esta revisión sistematiza los hallazgos de 30 estudios revisados por pares publicados entre 2020 y 2025. A partir de investigaciones empíricas y marcos teóricos, el estudio identifica transformaciones pedagógicas clave impulsadas por la IA, particularmente en el fortalecimiento del compromiso del estudiante, la motivación y la instrucción personalizada. El análisis adopta una postura crítica y orientada a la equidad, destacando cuestiones poco exploradas como el sesgo algorítmico, el acceso desigual a la infraestructura digital y la disminución de la agencia profesional docente. La revisión también examina las implicaciones cognitivas y éticas del uso de la IA, incluyendo preocupaciones sobre la dependencia excesiva de herramientas automatizadas y la erosión de la integridad académica. A pesar de sus aportes, el estudio presenta limitaciones relacionadas con su enfoque en fuentes en inglés y la falta de datos longitudinales en la literatura revisada. Estas restricciones subrayan la necesidad de futuras investigaciones que sean culturalmente sensibles, contextualizadas y sustentadas en la colaboración interdisciplinaria. La revisión ofrece una síntesis con proyección de futuro, y aboga por una implementación reflexiva y éticamente guiada de la IA en la enseñanza de idiomas para promover tanto la innovación como la equidad educativa.

Palabras clave: Inteligencia Artificial (IA), cognición, sociedad de la información, innovación, práctica docente.

INTRODUCTION

This article offers a distinctive contribution by critically examining the context-specific implementation of Artificial Intelligence (AI) tools in English as a Foreign Language (EFL) education. While AI is increasingly acknowledged as a catalyst for innovation in instructional design, administrative efficiency, and learner engagement, its role in language education demands more focused and rigorous scholarly scrutiny (Emerson, 2024).

While much of the literature highlights AI's benefits, such as real-time feedback and learner personalization, this review interrogates these assumptions by evaluating efficacy, sustainability, and pedagogical appropriateness. Despite the growing number of general reviews in Artificial Intelligence in Education (AIEd) (Chen et al., 2020), a discernible research gap persists regarding targeted analyses of AI's pedagogical implications in EFL instruction. The integration of AI-supported platforms has been accelerated by global disruptions such as the COVID-19 pandemic, which reinforced the need for resilient, scalable, and context-sensitive educational technologies (Layali & Al-Shlowiy, 2020). Yet, few studies offer nuanced insights into how these tools perform across diverse sociolinguistic settings or account for the evolving expectations of both learners and educators.

This review is based on a systematic analysis of peer-reviewed publications from 2020 to 2025. Searches were conducted in Scopus and Google Scholar using targeted terms such as "AI in EFL," "generative AI and language learning," "adaptive systems in English education," and "AI ethics in education." Only empirical studies, theoretical articles, and policy papers published in English and meeting scholarly rigor standards were included. Sources were assessed for relevance, citation frequency, methodological transparency, and theoretical contribution. The review synthesizes findings across qualitative, quantitative, and mixed-methods research to develop a comprehensive perspective on the integration of AI in EFL education.

This article is guided by the following research questions:

- Which Artificial Intelligence tools and technologies have been implemented in English as a Foreign Language instruction between 2020 and 2025?

- What impacts have Artificial Intelligence tools had on the process of teaching English as a Foreign Language?

- What challenges have educators and students faced during the implementation of Artificial Intelligence in English language classrooms?

- What gaps have been identified in the existing research on the use of Artificial Intelligence in English as a Foreign Language education?

LITERATURE REVIEW

In recent years, Artificial Intelligence has become a transformative force across multiple sectors, notably in healthcare, engineering, and education. These cross-sectoral applications underscore AI's capacity to enhance efficiency, redefine professional practices, and research methodologies through new forms of human-machine collaboration. In the educational sphere, AI has significantly reshaped the landscape of English as a Foreign Language (EFL) instruction, offering innovative solutions for personalized learning, automated assessment, and adaptive feedback systems. Carrillo and Flores (2025) emphasize that AI technologies are driving pedagogical innovation and theoretical reflection, particularly in response to the rapid digitalization of teaching and learning in the post-pandemic era.

This reviewed literature was organized into core thematic categories to support critical analysis and highlight significant pedagogical developments, persistent challenges, and areas requiring further research.

AI for Personalized and Adaptive Learning

A dominant theme across the literature concerns the capacity of AI to personalize instruction based on learners' needs, goals, and proficiency levels. Studies consistently report that adaptive learning systems, such as intelligent tutoring platforms and automated feedback mechanisms, enable real-time adjustment of content delivery. This aligns with findings by Sullivan et al. (2023), who observed that AI-supported platforms can provide differentiated tasks, monitor progress continuously, and scaffold instruction with immediate corrective feedback.

The underlying pedagogical rationale draws on the Technology Acceptance Model (Davis, 1989) and Self-Determination Theory (Deci & Ryan, 1985), suggesting that when learners perceive AI tools as both useful and supportive of autonomy, engagement, and motivation are enhanced. However, despite these benefits, several authors, including Agbesi (2020), point out that the effectiveness of personalization remains difficult to

measure across varied learner profiles and educational settings. Furthermore, existing tools often lack the capacity to interpret contextual or affective cues, which limits the depth of truly individualized instruction.

Enhancing Learner Engagement and Motivation

Another key strand in the literature focuses on the role of AI in boosting learner engagement and intrinsic motivation. Gamification elements, interactive dialogue systems, and adaptive feedback loops are widely credited with increasing participation and sustaining attention. Chen et al. (2022) emphasize how AI tools can foster more interactive and emotionally responsive learning environments, particularly among adult and young adult learners.

The positive impact on motivation is further supported by communicative language teaching principles (Richards & Rodgers, 2022), which advocate for meaningful interaction and learner-centered approaches. However, scholars such as Shen et al. (2024) caution that motivation may be short-lived if AI is implemented without curricular alignment or adequate instructional design. Additionally, few studies systematically assess the long-term sustainability of engagement, pointing to a research gap concerning longitudinal evaluation.

Communicative Competence and Language Development

The literature also explores how AI supports the development of core language skills, especially communicative competence. Tools that simulate conversational interaction have been shown to provide learners with increased opportunities to practice language in context-rich scenarios. Wei (2023) and Wang et al. (2020) demonstrate that such tools can enhance pronunciation, fluency, and vocabulary acquisition through frequent, low-stakes practice.

Li et al. (2023) argued that many AI systems still lack a nuanced understanding of sociolinguistic variation and cultural pragmatics, which limits their effectiveness in fostering authentic communication, particularly for learners from linguistically diverse backgrounds. In addition, the risk of over-reliance on automated translation and correction tools has been raised as a potential barrier to developing metacognitive awareness and independent language production.

Teacher Roles, Agency, and Professional Practice

A less frequently addressed, yet critically important theme in the literature concerns the evolving role of teachers in AI-enhanced classrooms. AI can reduce workload through automated assessment and content delivery; it also requires educators to develop new

competencies in digital pedagogy and data interpretation. Studies by Zhang et al. (2025) suggest that many teachers experience both empowerment and disempowerment when using AI tools, gaining efficiency but losing control over some pedagogical decisions.

This duality reflects broader concerns about the diminishing professional agency of teachers, particularly in contexts where AI adoption is driven by top-down policy mandates rather than collaborative design. The literature strongly recommends sustained investment in teacher training and the inclusion of educators in the design and evaluation of AI systems.

Ethical Considerations and Data Justice

The ethical implications of AI in EFL education constitute a growing area of concern. Across the reviewed literature, recurring issues include algorithmic bias, lack of transparency in decision-making, and risks to learner privacy. Liu et al. (2024) and Lyerly (2023) highlight how AI tools can inadvertently reinforce dominant linguistic norms, misinterpret learner inputs based on dialect or accent, and compromise fair assessment practices.

The widespread use of generative AI for written tasks raises questions about academic integrity and the authenticity of learner output. Literature calls for a redefinition of assessment standards and the integration of digital ethics into language education. This includes fostering awareness of data governance among both teachers and students and designing AI applications that reflect ethical safeguards and cultural sensitivity.

Organizing the research into thematic categories reveals clear directions for future inquiry, particularly in assessing long-term outcomes, addressing cultural and linguistic diversity, and strengthening professional development frameworks.

METHODOLOGY

This article adopts a systematic and well-justified methodological approach to synthesize recent scholarly work and examine how empirical findings and theoretical frameworks shape the development of English as a Foreign Language instruction. Sources were selected from Google Scholar and Scopus, with a focus on publications from 2020 to 2025 to ensure relevance and currency. Zotero reference management software was used to organize and code the literature.

Thematic categories included teachers' evolving roles, ethical considerations in AI use, learner autonomy, and communicative competence, enabling a structured analysis of how Artificial Intelligence is transforming language education across interdisciplinary

contexts. The analysis and interpretation followed the model by Londoño et al. (2014), which involves four sequential stages: contextualization, classification, categorization, and analysis.

The initial phase, contextualization, involved a thorough documentary search and theoretical reflection to define analytical categories and establish criteria for systematic data organization. Analytical Research Summaries (ARS) were created to structure data into matrices during classification, facilitating hermeneutic analysis through the hierarchical grouping of information into internal and external categories in the categorization stage. The final phase employed open, axial, and selective coding techniques for thematic analysis, enabling the identification of emergent categories and subcategories and deepening interpretative insights. The documentary review drew a total of 30 documents, and the criteria for document selection and search procedures are outlined in Table 1.

Table 1. *Study Selection*

Search Criteria	
1.	Research focusing on the application of artificial intelligence in English as a foreign language instruction.
2.	Research articles and master's theses.
3.	Publications dated from 2020 to 2025.
4.	Both national and international research investigations.
5.	Articles published in academic journals.

Source: Own elaboration.

From an initial pool of over 200 academic sources, 30 studies were selected based on established inclusion criteria for in-depth thematic analysis. These studies were chosen for their empirical rigor and relevance to the evolving role of Artificial Intelligence in English as a Foreign Language instruction. The analysis revealed a convergence of findings around three central outcomes: enhanced learner engagement, increased motivation, and more effective personalized instruction. Table 2 presents a categorized synthesis of these studies, organizing them into thematic clusters that reflect the distribution of research focus across the field. The table also includes representative authors and publication years, offering insight into recent scholarly contributions.

Table 2. *Summary of Reviewed Studies on AI Integration in EFL Education by Thematic Category*

Theme /Category	Number of Studies	Representative Authors /Years	Main Findings or Insights	Identified Research Gaps
Learner engagement	10	Xu et al. (2022), Chen et al. (2023), Farinetti et al. (2024), Lo, C.K. (2023), Liang et al. (2021), Neyem et al. (2024), Lee et al. (2021), Lin & Lai (2021), Ng et al. (2021), Wu et al. (2020)	AI-enhanced interaction, dialogue systems, and feedback improve learner participation and classroom dynamics.	Lack of longitudinal data on sustained engagement
Motivation	6	Wang et al. (2022), Wu et al. (2020), Li et al. (2023), Zhai & Wibowo (2022), Maier et Klotz (2022), Kim et al. (2022)	Gamification and adaptive feedback tools increase learner motivation, especially in adult learners.	Lack of cultural comparison in motivation patterns
Personalized instruction	14	Huang et al. (2021), Liu et al. (2021), Tang et al. (2021), Gayed et al. (2022), Diwain et al. (2023), Pham et al. (2022), Schiff. (2021), Khan et al. (2025), Sok & Heng (2023), Du et al. (2022), Su et al (2022), Lee (2023), Park et al. (2023), Yang (2022)	Adaptive AI systems personalize learning content and pace, offering real-time feedback aligned to individual needs.	Gaps in measuring actual learning gains across levels

Source: Own elaboration.

DISCUSSION

Within the evolving landscape of digitally mediated EFL instruction, the pedagogical affordances and limitations of AI-based technologies have become increasingly apparent through classroom-level implementation. AI-enhanced tools demonstrate strong potential for personalizing instruction, offering real-time feedback, and facilitating interactive learning environments. These observed benefits are consistent with the findings of Liu et al. (2024), who identify five key advantages of AI in EFL settings. Collectively, these developments reflect a broader pedagogical shift toward emotionally responsive and learner-centered approaches that extend beyond the constraints of traditional classroom structures.

Several recent studies affirm the potential of AI to enhance EFL instruction through personalization, adaptive feedback, and real-time engagement. Findings by Cheng et al.

(2025) and Zhou et al. (2023) provide empirical evidence on AI's capacity to improve writing performance and learner motivation. The integration of AI-supported platforms has aligned with broader global efforts to ensure continuity in education (Layali & Al-Shlowiy, 2020). These studies collectively underscore how AI is contributing to a pedagogical paradigm shift, one in which the traditional boundaries of classroom instruction are redefined by intelligent systems capable of supporting diverse learning styles and paces. Many scholars cite real-time feedback as a key advantage of AI tools, and few evaluate its sustainability or long-term pedagogical impact. There remains a significant gap in longitudinal studies that assess how learners' engagement and autonomy evolve over time with sustained AI use.

Similarly, the widespread emphasis on gamification and motivation, as argued by Wang et al. (2021), often lacks cross-cultural validation. Learner responses to AI-driven gamified platforms vary by region, age group, and instructional context, yet this heterogeneity is largely absent from most studies.

Although recent studies have acknowledged algorithmic bias and data privacy concerns (Liu et al., 2024), few explore how these issues manifest in multilingual and multicultural contexts. As Kim et al. (2022) argue, the future of AI in education must rest on hybrid instructional models that integrate AI as a complementary rather than a substitutive force, a stance strongly supported in this review.

The findings suggest that while AI can support differentiation and responsiveness in instruction, it is the teacher's role to cultivate reflective, critical, and ethically grounded learning environments. This means embedding AI use within a pedagogical framework that promotes learner agency, values human interaction, and incorporates ethical literacy.

CONCLUSIONS, REPERCUSSIONS, AND INFERENCES

This structured reflection incorporates emerging pedagogical trends, documented limitations, and critical implications for future research and practice, grounded in verifiable academic literature and guided by a forward-looking agenda.

Pedagogical Transformations and Theoretical Foundations

The reviewed studies confirm that AI integration is reshaping EFL instruction by promoting learner engagement, enhancing motivation, and enabling personalized instruction. The communicative principles outlined by Richards and Rodgers (2022) support the use of AI tools in facilitating authentic interaction and language production. Empirical research

from the past five years indicates that intelligent tutoring systems, automated feedback mechanisms, and speech recognition technologies are particularly effective in addressing diverse learner needs. These tools allow for adaptive instruction, enabling learners to progress at individualized paces and receive instant feedback tailored to their specific challenges. This marks a significant departure from traditional teacher-centered models toward a more learner-driven, data-informed paradigm.

Institutional and Infrastructural Repercussions

One of the primary concerns is the technological divide between well-resourced and under-resourced educational contexts. Access to AI tools often depends on stable internet connectivity, advanced hardware, and teacher digital literacy, which remain unevenly distributed across institutions and regions.

Empirical evidence reveals that speech recognition systems frequently fail to process non-native accents with accuracy, potentially creating a disadvantage for learners whose pronunciation deviates from standardized norms. Similarly, many AI applications are limited in their ability to interpret diverse linguistic registers, cultural references, and idiomatic expressions, reinforcing dominant language ideologies and marginalizing linguistically diverse learners. These limitations have direct implications for curriculum design and instructional planning. Without addressing these infrastructural gaps, the pedagogical potential of AI risks being unrealized for a significant segment of the global EFL population.

Ethical and Cognitive Implications

Concerns related to algorithmic bias, opaque decision-making processes, and inadequate data protection protocols must be addressed to ensure learner trust and equitable participation. Several studies point out that the datasets used to train AI systems often reflect and perpetuate existing biases, leading to unequal treatment of learners from marginalized linguistic or cultural backgrounds.

Many students resort to AI-generated translations or essay drafts, which may diminish opportunities for active language production and metacognitive engagement. These patterns necessitate a critical reevaluation of assessment design and underscore the need to embed digital ethics and data literacy in language curricula. AI must therefore be conceptualized not as a replacement for cognitive engagement but as a scaffold that enhances learners' ability to reflect, interact, and construct knowledge.

The Role of Teachers and Professional Agency

Another underexplored area in literature is the shifting role of teachers in AI-enhanced learning environments. While AI offers substantial support in delivering differentiated

instruction, it also challenges traditional conceptions of professional autonomy. Teachers are increasingly tasked with integrating complex digital tools while simultaneously maintaining pedagogical coherence and student-centeredness.

Research emphasizes the importance of teacher agency in mediating AI use, highlighting the need for sustained professional development programs that empower educators to make informed decisions about technology adoption. Without robust training frameworks, teachers may become passive users of AI systems rather than active shapers of digital pedagogy. This suggests that future research should prioritize studies that explore how teachers negotiate their roles within technologically mediated classrooms and how their professional identity evolves in tandem with AI integration.

Future Research Directions

The findings of this review underscore several critical gaps that warrant further investigation. First, longitudinal studies are needed to assess the sustained impact of AI tools on language learning outcomes, particularly in relation to communicative competence and learner autonomy. Most existing studies offer short-term insights, limiting the ability to evaluate long-term educational efficacy.

Second, culturally responsive research is essential to understand how AI functions across diverse educational settings. Current literature remains largely concentrated in specific geographical regions, with limited exploration of sociolinguistic variability and culturally specific learning needs.

Third, more interdisciplinary collaborations are needed to design inclusive AI systems that reflect pedagogical integrity and promote social equity. The convergence of applied linguistics, computer science, and educational policy can produce AI applications that are not only technically advanced but also ethically responsible and culturally sensitive.

Finally, emerging domains such as emotional AI and multimodal learning platforms represent promising frontiers. These technologies offer potential for creating more empathetic, responsive, and engaging digital learning environments. Their development and implementation, however, should be guided by rigorous research and contextual awareness.

In conclusion, while AI holds transformative potential for EFL instruction, its educational value is contingent upon ethical, pedagogically sound, and context-sensitive implementation. Future research must adopt longitudinal designs to assess the sustained impact of AI on both learner outcomes and teaching practices. Additionally,

a multidisciplinary, reflective, and equity-driven approach will be critical to responsibly harnessing AI's role in the future of language education.

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