

ARTIFICIAL INTELLIGENCE IN ELT: ADVANCING ADAPTIVE AND PERSONALIZED LANGUAGE LEARNING

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Article Info	Abstract
Article History Received: July 2025 Revised: August 2025 Accepted: September 2025 Published: October 2025	<i>This study investigates the pedagogical benefits and challenges of integrating Artificial Intelligence (AI) technologies in English Language Teaching (ELT) classrooms. With the rapid advancement of AI, its application in education, particularly in language learning, has generated increasing scholarly and practical interest. A mixed-methods approach was adopted, combining quantitative data from a survey of 120 English teachers in Palembang with qualitative insights from in-depth interviews with 10 teachers. The survey employed a Likert-scale questionnaire to assess the perceived impact of AI, while thematic analysis was applied to the interview data. The findings indicate that 78% of respondents agreed AI supports personalized learning, 82% believed it enhances student engagement, and 75% reported increased student motivation. Nevertheless, 45% of teachers identified technical barriers such as unreliable internet access, and 52% expressed concerns over insufficient teacher training. Qualitative evidence reinforced these perspectives, with teachers highlighting the irreplaceable role of human interaction and warning against excessive reliance on AI tools. Overall, the study suggests that AI can enrich ELT by providing tailored content and real-time feedback, but its effective integration depends on addressing infrastructural limitations and strengthening teacher preparedness. Teachers also emphasized balancing AI with traditional pedagogies to preserve the essential human dimension of language learning. Beyond the classroom, these findings carry broader implications for policy and practice. They highlight the need for systemic reforms in infrastructure, sustained professional development, and stronger alignment between AI tools and curriculum goals. If strategically implemented, AI has the potential not only to enhance ELT practices but also to advance equitable, future-ready education systems.</i>
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INTRODUCTION

Artificial Intelligence (AI) has rapidly emerged as a transformative innovation, reshaping multiple sectors such as healthcare, finance, manufacturing, and, more recently, education. The advent of AI technologies has introduced a new era in which machines can perform tasks that traditionally required human intelligence (Zawacki-Richter et al., 2019). AI systems are now capable of automating processes, enhancing decision-making, and improving outcomes across

various domains. In the field of education, AI's integration is especially impactful because it influences how knowledge is delivered, assessed, and personalized to meet the diverse needs of learners. As education systems become increasingly complex and diverse, the role of AI in shaping these environments has never been more significant.

AI technologies encompass a wide range of sophisticated tools, such as machine learning, natural language processing (NLP), computer vision, and neural networks. These technologies collectively enable systems to simulate cognitive functions typically associated with human intelligence, such as reasoning, problem-solving, and decision-making (Russell & Norvig, 2021). In educational contexts, AI's ability to process vast amounts of data and generate insights provides valuable opportunities for enhancing the learning experience. For example, AI-powered systems can provide personalized feedback to learners, automate assessments, and adapt content delivery in real-time, creating dynamic and learner-centered environments that cater to the individual needs of students (Zawacki-Richter et al., 2019). These tools have the potential to revolutionize traditional education models by facilitating individualized instruction that is increasingly important in today's diverse classrooms.

The integration of AI technologies within English Language Teaching (ELT) is a particularly exciting development. The field of ELT has long emphasized communicative and learner-centered pedagogies that encourage student engagement, interaction, and autonomy. AI applications, such as Duolingo, ELSA Speak, and ChatGPT, exemplify how AI can support these pedagogies by providing real-time feedback, gamified learning experiences, and interactive dialogues that extend learning beyond the traditional classroom setting. These tools allow learners to engage with language learning on their own terms, fostering autonomy while offering educators valuable insights into students' learning processes through analytics. The use of AI in ELT has been shown to significantly improve students' fluency, vocabulary retention, and motivation (Chen et al., 2020; Lin & Gao, 2022). These advancements demonstrate AI's potential to enhance language learning in meaningful ways, making the process more engaging and effective.

Despite the growing evidence of AI's positive impact on education, much of the existing research remains fragmented. Studies tend to focus on the technical functionalities of AI tools or on their broad applications in education, without fully exploring how AI can be integrated into specific pedagogical frameworks, such as those used in ELT. For example, Gong, Lai, and Wang (2023) argue that successful AI adoption in education requires a pedagogical framework that positions AI as an integral part of the teaching process, rather than as a supplementary tool. The adoption of AI in language teaching has not been uniform, with only about 40% of language instructors reporting full integration of AI tools into their practices (Zawacki-Richter et al., 2019). This suggests that while AI's technical capabilities are widely acknowledged, its pedagogical implications remain underexplored, particularly in terms of how these tools can be effectively integrated into existing teaching methodologies.

The novelty of this study lies in its effort to bridge the gap between AI's technical potential and its pedagogical implications within ELT classrooms. While previous research has primarily documented the capabilities of AI tools, this study goes further by examining how AI can support adaptive and personalized learning, while also identifying the barriers that hinder its full adoption in language classrooms. By focusing on authentic classroom practices, the study aims to provide valuable insights into how AI can be aligned with communicative and learner-centered approaches that are central to ELT. In particular, this research seeks to understand how AI can be used not only to automate administrative tasks but also to enhance the pedagogical experience by making learning more responsive to the individual needs of students.

This study is guided by two key research questions: What are the pedagogical benefits and challenges of integrating AI technologies in ELT classrooms? and How does AI support

adaptive and personalized learning in English Language Teaching? By answering these questions, the study contributes to the growing body of literature on educational technology and AI in education. It provides both theoretical insights into the potential of AI in transforming teaching and learning, as well as practical implications for teachers, policymakers, and curriculum designers who are interested in leveraging AI to create more effective and equitable language education systems.

The findings of this study will help educators understand the practical applications of AI in the ELT classroom and how these technologies can be used to support personalized learning. Additionally, the research will provide insights into the challenges and limitations that educators face when implementing AI tools, such as issues related to access, teacher training, and the potential for technology to undermine traditional teaching practices. By addressing these concerns, the study aims to offer a more holistic understanding of AI's role in education, helping educators make informed decisions about how to integrate these tools into their teaching practices in ways that enhance the learning experience for all students.

While AI has the potential to revolutionize education, particularly within ELT, its successful integration requires a careful examination of both its technical capabilities and its pedagogical implications. This study seeks to bridge the gap between these two areas by exploring how AI can be effectively utilized to support adaptive and personalized learning in ELT classrooms. By doing so, it aims to contribute to the development of more effective and inclusive teaching practices that harness the power of AI to meet the diverse needs of learners in today's education system.

RESEARCH METHOD

Research Design

This study adopted a mixed-method research design, combining both quantitative and qualitative approaches to offer a holistic understanding of how Artificial Intelligence (AI) is integrated into English Language Teaching (ELT). The decision to employ this design stemmed from its ability to triangulate data, which increases the credibility and robustness of the findings by cross-checking different types of data. The quantitative component of the study utilized structured questionnaires, which allowed for the collection of numerical data regarding the frequency, types, and intensity of AI tool usage by English teachers. These measurable insights provided a broad overview of AI's reach and application in the classroom, helping to identify patterns and trends. On the other hand, the qualitative component, achieved through semi-structured interviews, enabled a deeper exploration of teachers' personal perceptions, the challenges they face, and their expectations regarding AI integration. This qualitative data captured the nuanced experiences and individual viewpoints that are often lost in purely quantitative research. By combining these two approaches, the study not only gathered statistical evidence but also contextualized those findings within real-world teaching environments, enriching the overall interpretation and providing a more comprehensive view of AI's role in ELT (Creswell & Creswell, 2018; Tashakkori & Teddlie, 2020).

Research Participants

The study involved a diverse group of 120 English teachers from various educational institutions in Palembang, including both public and private schools at junior high, senior high, and vocational levels. This wide range of schools ensured a comprehensive representation of different educational contexts. The participants' teaching experience varied significantly, spanning from fewer than five years to more than 20 years, which allowed for a broad spectrum of perspectives on the integration of AI in teaching. The use of a total sampling strategy was crucial to ensure that all subgroups of the teacher population were included, thereby enhancing the study's generalizability (Fraenkel, Wallen, & Hyun, 2019). To delve deeper into the pedagogical aspects of AI integration, 10 teachers were purposively selected for in-depth

interviews. This approach allowed the study to gather rich, qualitative data that shed light on how teachers with different experiences and institutional backgrounds perceive and apply AI in their classrooms.

Instruments

Two primary instruments were used: a structured questionnaire and semi-structured interviews. The questionnaire, designed on a five-point Likert scale, gathered data on teachers' familiarity with AI, frequency of use, and perceived benefits and challenges. Prior to distribution, the questionnaire underwent expert review and a pilot test with 20 teachers to establish content validity and reliability, resulting in a Cronbach's alpha of 0.87, indicating high internal consistency. The interview protocol was designed to elicit detailed narratives of teachers' lived experiences with AI integration, covering themes of pedagogical adaptation, learner engagement, and professional development. Meanwhile, the qualitative component, via semi-structured interviews, offered deeper exploration of teachers' perceptions, challenges, and expectations regarding AI implementation. Such a combination is particularly valuable in educational research, as it bridges statistical evidence with contextualized experiences (Creswell & Creswell, 2018; Tashakkori & Teddlie, 2020).

Data Collection Procedures and Ethical Safeguards

Data collection for this study was conducted in two stages to ensure comprehensive and reliable insights from participants. The first stage involved administering questionnaires to all participants, both online and in print. This dual approach was adopted to accommodate different preferences and to ensure maximum reach, allowing for diverse participation. The structured questionnaires were designed to collect quantitative data on the frequency, types, and intensity of AI tool usage in English Language Teaching (ELT). The second stage consisted of semi-structured interviews, which were conducted either face-to-face or via Zoom, depending on participants' availability and convenience. This flexibility ensured that the research could include insights from teachers regardless of geographical or scheduling constraints, enabling a rich understanding of their personal experiences with AI integration. Throughout the data collection process, strict ethical standards were followed. Informed consent was obtained from all participants, ensuring they were fully aware of the study's purpose, their rights, and how their data would be used. Participation was entirely voluntary, and anonymity was assured to protect participants' privacy. All collected data were stored securely to prevent unauthorized access. To further protect confidentiality, pseudonyms were used when reporting qualitative findings. Ethical approval for the study was also obtained from the institutional review board before data collection began, ensuring the study adhered to ethical research practices.

Data Analysis

The quantitative data collected through questionnaires were analyzed using SPSS software, applying descriptive statistical techniques such as mean, percentage, and standard deviation. These methods provided a clear summary of the patterns and trends related to AI tool usage among the participants, including the frequency and intensity of usage. By calculating these metrics, the study was able to quantify how widely AI tools were being utilized in English Language Teaching (ELT) and identify any significant variations across the sample (Field, 2020; Babbie, 2020). The qualitative data, gathered through semi-structured interviews, were transcribed verbatim to preserve the participants' exact words. Thematic analysis was then employed to interpret these data, following the guidelines set by Braun and Clarke (2021). This analysis involved three stages of coding: open coding, which identified initial categories; axial coding, which explored connections between categories; and selective coding, which refined the themes to focus on the most relevant aspects of the data (Saldaña, 2021). To integrate the findings from both the quantitative and qualitative strands, joint display analysis was used. This approach allowed the researcher to present and interpret the quantitative results, such as the

frequency of AI tool usage, alongside qualitative insights, such as teachers' personal narratives about the benefits and challenges of AI in the classroom. This combined analysis provided a more comprehensive and nuanced understanding of AI's role in ELT than either method could offer independently.

RESEARCH FINDINGS AND DISCUSSION

Quantitative Findings

The survey of 120 English teachers revealed clear evidence of AI’s pedagogical value in ELT. Rather than listing every survey item, the results below highlight the most significant and unique findings (see Table 1).

Table 1
Key Pedagogical Benefits and Challenges of AI in ELT

Dimension	% Agree/Strongly Agree	Interpretation
AI personalizes student learning	85.8%	Enhances differentiated instruction
AI increases student motivation	82.5%	Boosts learner engagement
AI makes lessons more engaging	83.3%	Encourages participation
AI supports Emancipated Curriculum	87.3%	Aligns with national reform
AI improves learning outcomes	85.8%	Enhances performance
Challenge: Student over-reliance on AI	60.0%	Risk of reduced critical thinking
Challenge: Technical difficulties	58.3%	Barriers to classroom use
Challenge: Insufficient teacher training	61.7%	Limits effective adoption

The table outlines the key pedagogical benefits and challenges of integrating Artificial Intelligence (AI) in English Language Teaching (ELT), highlighting both the positive impacts and potential barriers that arise with its use. One of the most significant benefits of AI in ELT is its ability to personalize student learning, with 85.8% of participants agreeing or strongly agreeing that AI enhances differentiated instruction. This suggests that AI tools can tailor educational experiences to individual student needs, allowing for more customized learning paths that accommodate various learning styles and paces. Additionally, 82.5% of respondents noted that AI increases student motivation, which is a crucial factor in fostering learner engagement. The ability of AI to make lessons more engaging was also acknowledged by 83.3% of the participants, further emphasizing AI's role in stimulating active participation in the classroom. AI’s alignment with educational reforms, particularly the Emancipated Curriculum, was also positively highlighted by 87.3% of participants, reflecting its compatibility with national education reforms that seek to create more inclusive and student-centered learning environments. Furthermore, 85.8% of teachers observed that AI improves learning outcomes, contributing to better overall performance and success in language acquisition.

However, there are challenges associated with AI integration. Around 60.0% of respondents expressed concern about students becoming over-reliant on AI, which could hinder the development of critical thinking skills. Additionally, 58.3% of teachers reported facing technical difficulties, which can act as a significant barrier to the effective use of AI in classrooms. Insufficient teacher training was another challenge highlighted by 61.7% of participants, suggesting that without proper professional development, the full potential of AI tools cannot be realized in the classroom. These challenges point to the need for strategic support and training to ensure that AI’s benefits are maximized while minimizing potential drawbacks.

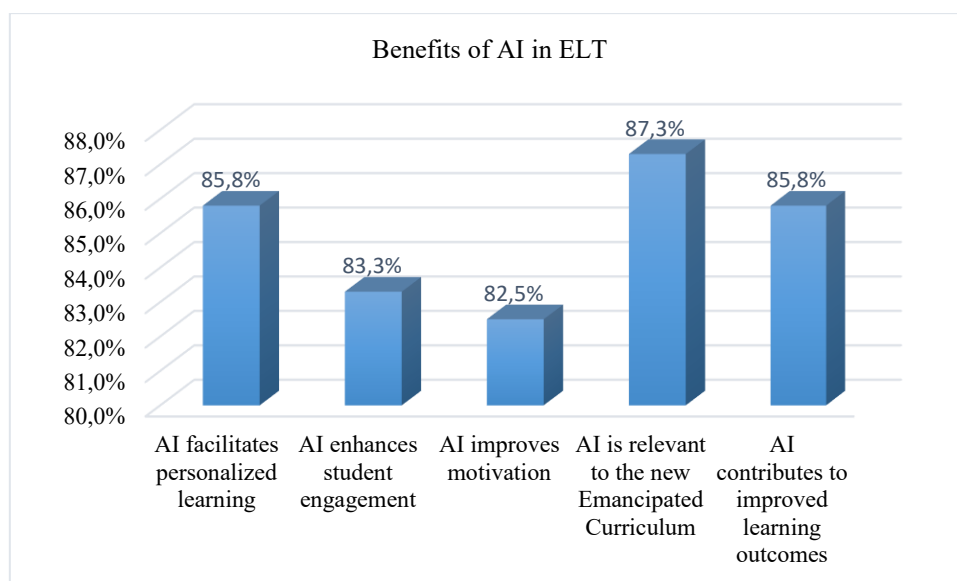


Figure 1. Benefits of AI in ELT

These findings underscore the role of AI in aligning with national educational reforms while fostering more individualized, engaging, and outcome-oriented language instruction. At the same time, teachers pointed to serious challenges. The most common issues were students' over-reliance on AI (60.0%), frequent technical disruptions (58.3%), and limited teacher confidence due to insufficient training (61.7%). The data presents in figure 2:

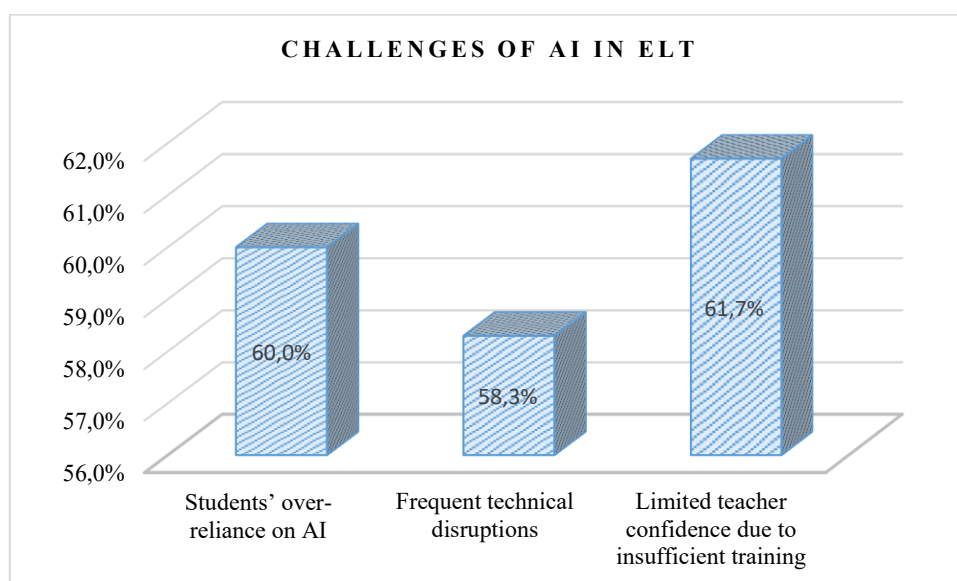


Figure 2. Challenges of AI in ELT

These findings suggest that while AI opens pedagogical opportunities, its sustainable integration requires professional development and infrastructure support.

Qualitative Findings (Thematic Analysis)

The interview data contextualized and enriched these results. Three dominant themes emerged:

1. Enhanced Personalized Learning – Teachers praised AI's ability to tailor lessons to different proficiency levels and provide instant feedback,

reinforcing quantitative findings of high endorsement for personalized learning.

2. Improved Teacher–Student Interaction – Many teachers noted that AI automates repetitive tasks, freeing them to focus on more meaningful interaction. However, this also linked to the challenge of training, as teachers needed more support to integrate AI effectively.
3. Concerns About Over-reliance – Teachers consistently warned that students might depend too much on AI for answers, reducing opportunities for authentic communication. This aligns with the quantitative concern regarding student dependency.

Taken together, the results indicate that AI is highly valued for making ELT more personalized, engaging, and aligned with current curriculum reforms. However, its effectiveness is constrained by infrastructure gaps, uneven teacher readiness, and the risk of undermining communicative competence if students rely too heavily on technology.

Discussion

The findings from both the quantitative and qualitative strands of this study offer significant insights into the potential and challenges of integrating Artificial Intelligence (AI) in English Language Teaching (ELT). The results suggest that while AI holds considerable promise in enhancing various aspects of language learning, its success is closely tied to contextual and pedagogical factors. These insights not only align with previous research but also offer practical implications for future AI integration in ELT, emphasizing the importance of a balanced approach that incorporates both technological advancements and human-centered teaching practices.

One of the most prominent findings from this study is the ability of AI to enhance personalization, motivation, and engagement in the language learning process. Teachers highlighted that AI-driven adaptive platforms allow learners to progress at their own pace, a feature that caters to individual learning needs. This aligns with the survey results, which showed a high percentage of agreement among teachers that AI fosters student motivation and improves learning outcomes. These results echo similar findings from Alisoy (2024), who reported measurable gains in vocabulary retention and grammar accuracy through AI-supported instruction. Furthermore, Xu et al. (2023) found that AI could reduce repetitive workloads, thereby helping to maintain learner engagement over time. In corroborating such evidence, this study reinforces the growing recognition that AI has the potential to shift ELT toward more learner-centered approaches, a pedagogical shift that aligns with broader trends in education that emphasize learner autonomy, differentiation, and individualized instruction.

The notion of learner autonomy is particularly significant in today's educational landscape, as it encourages students to take control of their own learning processes. AI tools, by allowing personalized learning paths and providing instant feedback, enable students to work at their own pace, addressing their unique learning needs. This can lead to greater self-efficacy and motivation, key components in fostering lifelong learners. The ability to provide real-time assessments and adaptive content ensures that students receive the right level of challenge and support, helping to bridge the gap between their current abilities and learning goals.

However, despite these promising advantages, several constraints temper AI's transformative potential in ELT. A recurring theme in the findings was the concern about over-reliance on technology, with teachers cautioning that AI should not replace the relational and affective dimensions of language learning. This concern mirrors the warnings of Zou et al. (2020), who emphasized that excessive dependence on AI could risk narrowing learners' critical thinking abilities. While AI can offer personalized, adaptive learning experiences, it cannot

replicate the emotional and interpersonal aspects of teaching that are central to language acquisition. Language learning is inherently social, and the relational interactions between teachers and students are vital for the development of communicative competence, cultural awareness, and emotional engagement. AI tools, no matter how advanced, cannot fully substitute the human mediation necessary to foster these critical aspects of language education.

In addition to concerns about over-reliance, technical barriers such as unreliable internet connectivity and limited access to devices emerged as significant challenges. These challenges are consistent with findings from Chen and Smith (2021), who highlighted the infrastructural inequities that exist in many educational contexts, particularly in under-resourced schools. In these environments, the promise of AI can be hindered by a lack of reliable technology and access to digital tools, leading to disparities in the educational opportunities available to students. Without consistent and equitable access to the necessary infrastructure, AI-driven initiatives may deepen the digital divide, leaving disadvantaged schools and learners at a further disadvantage.

Another critical challenge identified in this study is the lack of teacher training. Gong et al. (2023) pointed out that without systematic professional development, teachers often underutilize or misuse AI tools, limiting their effectiveness. In this study, teachers expressed concerns about their ability to effectively integrate AI into their teaching practices without adequate training. This underscores the importance of providing teachers with not only the technical skills to operate AI tools but also the pedagogical knowledge to integrate these tools meaningfully into their lessons. Teacher training should include not only how to use AI technologies but also how to leverage them to enhance student learning and support pedagogical goals. Without this support, the full potential of AI tools remains untapped.

Beyond technical and training-related challenges, teachers in this study also raised concerns about the curricular alignment of AI tools. While AI is effective for skills-based practice, such as grammar drills or vocabulary retention, it often overlooks the cultural and communicative aspects of language education. This insight is consistent with Hockly (2023), who argued that while AI can complement language learning, it cannot substitute the human mediation necessary for fostering intercultural competence and affective engagement. Language learning is not just about acquiring technical skills; it is also about understanding the nuances of communication, culture, and context. Teachers play a vital role in facilitating this deeper understanding, and AI tools must be designed to support this broader, more holistic approach to language education. As such, the integration of AI in ELT should not only focus on improving efficiency and performance but also ensure that these tools are adaptable to the cultural and communicative needs of language learners.

For practical implementation, the findings from this study underscore the importance of balancing technological innovation with human-centered pedagogy. Educational institutions should invest in reliable infrastructure and ensure equitable access to AI tools to prevent further disparities between well-resourced and under-resourced schools. This includes providing schools in underserved areas with the necessary technological resources, such as high-speed internet and modern devices, to ensure that all students have equal opportunities to benefit from AI-enhanced learning experiences. In addition, AI-related training should be embedded into ongoing professional development programs for teachers. This will equip them not only with the technical skills to use AI tools but also with the pedagogical strategies to integrate these tools effectively into their teaching. Policymakers should consider these factors when developing strategies for AI integration in education, ensuring that the adoption of AI is equitable and supported by adequate resources and training.

For future research, this study opens several avenues for further exploration. One area that remains underexplored is the long-term impact of AI on learner autonomy, creativity, and intercultural competence. While the present study focused on immediate pedagogical outcomes

such as motivation and engagement, it is crucial to explore how AI integration might influence students' development of these broader skills over time. Longitudinal studies could shed light on how sustained exposure to AI-driven learning environments affects students' capacity for independent learning, creative problem-solving, and their understanding of cultural contexts. These are key areas for the future of language education, as they contribute to the holistic development of learners in an increasingly interconnected and digital world.

This study contributes to the growing body of evidence that AI has the potential to transform English Language Teaching by enhancing personalization, motivation, and engagement. However, its success will only be realized if implementation strategies take into account the technical, pedagogical, and curricular challenges that exist in many educational contexts. By addressing these challenges and ensuring thoughtful integration of AI tools, educators can harness the full potential of AI to supplement, rather than replace, teachers. AI should be seen as a tool that enhances the human, institutional, and cultural fabric of language education, fostering environments that prioritize both technological innovation and human-centered pedagogy.

CONCLUSION

This study has demonstrated that the integration of Artificial Intelligence (AI) in English Language Teaching (ELT) offers substantial pedagogical benefits, particularly in terms of personalization, learner motivation, and engagement. By combining quantitative and qualitative insights, the findings confirm that AI-driven platforms can adapt content to individual needs, provide real-time feedback, and create more student-centred learning environments. These contributions strengthen the theoretical understanding of AI as a tool that supports learner autonomy and aligns with contemporary learner-centred pedagogies.

At the same time, the study underscores that the transformative potential of AI is contingent on overcoming persistent barriers. Technical constraints such as limited internet connectivity and device availability, alongside insufficient teacher training, restrict effective adoption. Moreover, concerns about over-reliance on technology highlight the irreplaceable value of human interaction in language education. These findings contribute theoretically by emphasizing the necessity of viewing AI not as a replacement for teachers, but as a complementary resource within a broader pedagogical framework.

In terms of practice, the study offers clear implications for educators, institutions, and policymakers. Infrastructure investment is needed to ensure equitable access to AI tools, while professional development programs must equip teachers with both technical skills and pedagogical strategies for AI integration. Additionally, developers should align AI tools more closely with curriculum objectives to ensure cultural and communicative dimensions of language learning are not overlooked.

Taken together, the study asserts that AI has the capacity to reshape ELT into a more dynamic, personalized, and engaging practice. Yet its success relies on balanced implementation that preserves the human dimension of teaching. Future research should extend this work by exploring long-term impacts of AI on learner autonomy, creativity, and intercultural competence, thereby advancing both theoretical models and practical innovations in language education.

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