

ARTIFICIAL INTELLIGENCE IN ENGLISH LANGUAGE TEACHING: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Despite the expanding research on Artificial Intelligence (AI) in English Language Teaching (ELT), existing systematic reviews often lack a structured synthesis linking AI technologies, pedagogical practices, and learning outcomes. Most prior studies emphasize general trends, leaving limited insight into how specific AI tools are implemented and how they shape language learning processes. Addressing this gap, this study conducts a Systematic Literature Review (SLR) using the PRISMA framework, analyzing 16 selected articles published between 2020 and 2026. The findings are organized into three dimensions: AI technologies, pedagogical implementation, and associated benefits and challenges. Results indicate that AI in ELT is primarily applied through neural networks, deep learning, generative AI, intelligent learning platforms, and AI-supported blended learning. These technologies enable adaptive learning, automated feedback, and data-driven instruction. While AI enhances personalization, interactivity, and learning efficiency, it also raises challenges related to teacher readiness, ethical concerns, and pedagogical alignment. This study provides an integrative synthesis of AI use in ELT and highlights key directions for future research and practice.

Keywords: Artificial Intelligence; English Language Teaching; AI-assisted learning; Systematic Literature Review; Digital Learning

Digital transformation has become one of the most influential forces shaping language education in the twenty-first century, driving the integration of advanced technologies into pedagogical practices (Muhammed Zein, 2026). Among these technologies, Artificial Intelligence (AI) has emerged as a critical innovation with the potential to transform English Language Teaching (ELT) through adaptive learning systems, automated feedback, and data-driven instruction. In response to this development, this study systematically examines how AI tools are integrated into ELT and synthesizes existing research to identify current trends, opportunities, and challenges in the field. Over the past two decades, English Language Teaching (ELT) has undergone substantial changes due to the increasing integration of digital technologies into language learning environments. Contemporary literature indicates that English teaching practices are gradually shifting from traditional teacher-centered approaches toward more learner-centered, communicative, and technology-enhanced pedagogies. This transformation is supported by the widespread availability of digital devices, online learning platforms, and educational technologies that enable more flexible and authentic language interaction across diverse learning contexts (Yang, 2024). In this evolving environment, technology does not merely function as a

supplementary instructional tool but increasingly shapes curriculum design, teaching strategies, and patterns of interaction between teachers and learners in language education.

Building on this transformation, Artificial Intelligence technologies extend the capabilities of digital learning by enabling more sophisticated forms of personalization and automated instructional support. Rather than functioning solely as tools, AI systems operate as intelligent mechanisms that can analyze learner performance, generate adaptive feedback, and dynamically adjust learning pathways. These systems include machine learning algorithms, natural language processing (NLP), automated writing evaluation (AWE), intelligent tutoring systems (ITS), and learning analytics (Sharadgah & Sa'di, 2022). For example, automated feedback systems allow learners to identify linguistic errors in real time, while adaptive platforms tailor instructional materials based on individual proficiency levels and learning behavior (Li & Tang, 2024). Consequently, AI technologies not only enhance efficiency in language learning but also redefine how instruction is delivered and experienced in contemporary ELT environments.

Despite the growing interest in AI-supported language learning, the integration of these technologies into ELT remains complex and challenging. Research has highlighted that the implementation of AI tools in language education is often constrained by technological infrastructure limitations, varying levels of teacher readiness, and ethical concerns related to data privacy and algorithmic decision-making (Crompton et al., 2024). In addition, scholars have raised concerns about algorithmic bias, the reliability of automated evaluation systems, and the potential overreliance on AI technologies in language learning processes (Micalay-Hurtado & Poole, 2022). These challenges indicate that the integration of AI into ELT requires careful pedagogical design, responsible governance, and sustained professional development for teachers.

Crompton et al. (2024) report that several AI-based applications have been explored to enhance language learning experiences. One widely discussed approach is the use of AI-powered chatbots to support conversational practice and language interaction. Chatbots can simulate authentic dialogue and provide real-time feedback, allowing learners to practice speaking and writing outside the classroom environment. Research also suggests that chatbot-assisted learning can increase learner autonomy and engagement, particularly in contexts where opportunities for authentic communication are limited (Pellim, 2025). Another prominent application involves automated writing evaluation systems, which analyze students' written texts and provide feedback related to grammar, vocabulary, and organization to support the revision process (Wotring, 2025).

In addition to chatbots and automated feedback systems, intelligent tutoring systems and adaptive learning platforms have also received increasing attention in the literature. These systems are designed to provide individualized instructional pathways by analyzing learners' progress and adjusting learning tasks accordingly (Li & Tang, 2024). Through learning analytics and algorithm-based recommendations, such platforms can offer targeted practice activities in grammar, vocabulary, pronunciation, listening, and reading skills. Emerging immersive technologies, including augmented reality (AR), virtual reality (VR), and metaverse environments, have further expanded the possibilities of AI-supported language learning by enabling contextualized and interactive language experiences (Parlar & Sütçü, 2025). These developments suggest that AI has the potential to reshape not only instructional delivery but also the broader learning ecology within ELT.

Although existing research highlights the promising potential of AI in language education, several significant research gaps remain. Previous systematic reviews indicate a lack of longitudinal studies that examine the long-term impact of AI integration on language proficiency development, learner autonomy, and motivation (Sharadgah & Sa'di, 2022). Moreover, there is

still limited understanding of how AI technologies can be effectively integrated into pedagogical practices across diverse educational contexts and cultural settings (Crompton et al., 2024). The literature also emphasizes the need for stronger theoretical frameworks to guide the design of AI-enhanced language learning environments and to ensure alignment with curriculum objectives and assessment practices (Micalay-Hurtado & Poole, 2022). These gaps highlight the importance of synthesizing existing research findings to better understand how AI technologies are currently being used in ELT.

Based on these considerations, the present study conducts a systematic literature review on the integration of Artificial Intelligence (AI) tools in English Language Teaching (ELT). Specifically, the review is structured around three analytical dimensions: (1) the types of AI technologies applied in language education, (2) the ways in which these technologies are implemented in pedagogical practice, and (3) the benefits and challenges associated with their use. Accordingly, the findings of this study are organized to reflect these three dimensions in order to provide a coherent and analytically aligned synthesis. The novelty of this research lies in offering a structured mapping of AI integration in ELT that connects technological categories, pedagogical applications, and learning implications, while also identifying directions for future research in technology-supported language education. By systematically mapping this landscape, the study contributes both theoretically and practically to the advancement of language education in the digital era.

METHOD

This study adopts a qualitative research approach using the Systematic Literature Review (SLR) method to examine the integration of Artificial Intelligence (AI) tools in English Language Teaching (ELT). The SLR method was selected because it allows researchers to identify, evaluate, and synthesize findings from previous studies in a systematic, transparent, and replicable manner. In the context of language education and educational technology, this method provides a structured framework for mapping research trends, identifying methodological patterns, and analyzing the impact of technological innovations on language learning processes. Previous studies indicate that research on AI in ELT is still evolving and requires systematic synthesis to clarify the development of the field and to identify gaps for future investigation (Sharadgah & Sa'di, 2022).

Research Design

The research design follows the stages of a Systematic Literature Review commonly used in language education research. These stages include the formulation of research questions, systematic literature searching, determination of inclusion and exclusion criteria, evaluation of study quality, data extraction, and synthesis of findings. This structured procedure helps reduce bias and ensures transparency in the research process. In the AI-in-ELT literature, a wide range of artificial intelligence techniques have been employed, including machine learning, neural networks, support vector machines (SVM), genetic algorithms, deep learning, decision trees, expert systems, natural language processing (NLP), data mining, cloud computing, and edge computing. The diversity of these technologies indicates that AI research in ELT spans multiple pedagogical applications such as automated assessment, translation tools, speaking practice systems, adaptive feedback mechanisms, and intelligent tutoring environments.

Data Sources and Search Strategy

The literature search was conducted using internationally recognized academic databases that provide extensive coverage of research in language education and educational technology.

The Scopus database was selected as the primary source because it indexes a large number of peer-reviewed publications and enables comprehensive identification of global research trends in English Language Teaching (ELT) (Suwanmanee & Mongkolhutthi, 2025). Although other databases such as Web of Science (WoS) also offer substantial scholarly coverage, Scopus was selected due to its broader inclusion of journals in applied linguistics and educational technology, as well as its extensive indexing of recent and emerging studies relevant to Artificial Intelligence (AI) in ELT.

To ensure systematic and replicable data retrieval, a structured Boolean search query was employed using combinations of key terms related to both ELT and AI. The search string was explicitly implemented using Scopus syntax (TITLE-ABS-KEY) as follows:

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TITLE-ABS-KEY(("artificial intelligence" OR "AI" OR "machine learning" OR "deep learning" OR "natural language processing" OR "NLP" OR "generative AI" OR "chatbot*") AND ("English language teaching" OR "English language learning" OR "teaching English as a foreign language" OR "EFL" OR "TESOL" OR "TEFL" OR "second language acquisition" OR "L2 learning")) AND PUBYEAR > 2019 AND PUBYEAR < 2027 AND (LIMIT-TO(DOCTYPE, "ar"))
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This query combines controlled vocabulary and common synonyms, applies field restrictions (TITLE-ABS-KEY), uses truncation (e.g., chatbot*), and sets explicit year and document-type filters to ensure precision, coverage, and reproducibility.

These keywords were searched within the title, abstract, and keyword fields (TITLE-ABS-KEY) to maximize relevance while maintaining comprehensive coverage of the topic. The use of Boolean operators allowed for precise filtering of studies that intersect both technological and pedagogical domains. In addition, the search was limited to articles published between 2020 and 2026 to capture recent developments in AI-supported English language teaching, ensuring that the selected studies reflect current pedagogical trends and technological advancements in contemporary educational contexts.

Inclusion and Exclusion Criteria

To ensure the quality and relevance of the selected studies, this review applied specific inclusion and exclusion criteria. Studies were included if they discussed artificial intelligence or AI-enabled technologies within the context of English language teaching or learning, reported outcomes related to language skills or learner experiences, were published as peer-reviewed journal articles, and employed qualitative, quantitative, or mixed-method approaches relevant to the research objective. Studies were excluded if they did not focus on AI applications in ELT, were non-academic publications such as opinion articles or blogs, or lacked clear descriptions of AI implementation in instructional contexts.

Study Selection and Evaluation Procedure

The study selection process involved several stages to ensure methodological rigor. Initially, titles and abstracts of retrieved articles were screened to determine their relevance to the topic of Artificial Intelligence in English Language Teaching. Articles that appeared relevant were then examined through full-text reading to confirm that they met the inclusion criteria. Eligible studies were further evaluated based on clarity of research objectives, methodological rigor, and relevance to the integration of AI technologies in ELT. This procedure ensured that the final corpus of literature represented credible and methodologically sound research suitable for systematic synthesis.

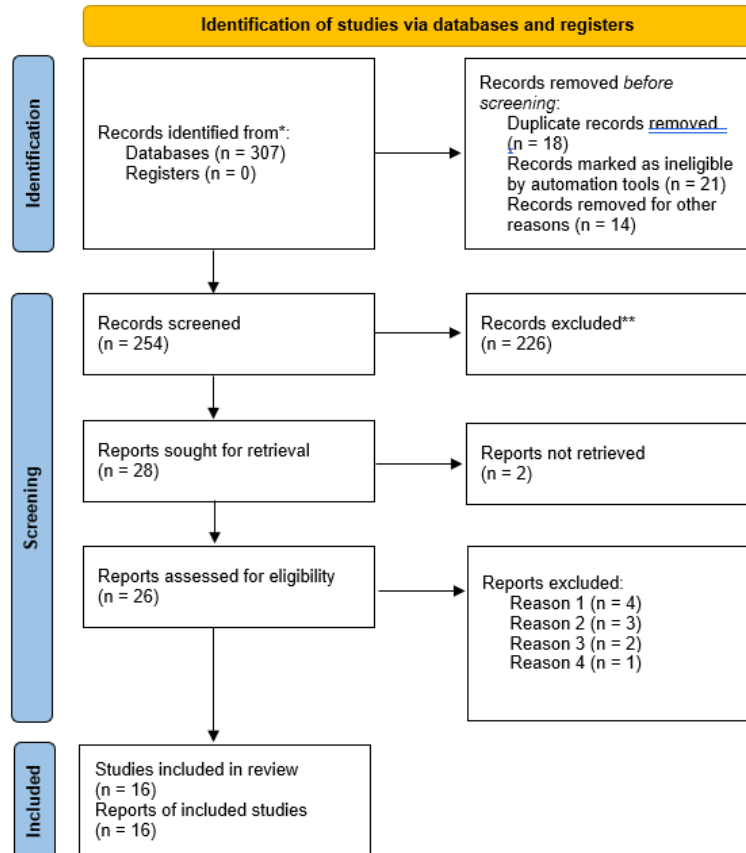


Figure 1. PRISMA Flow Diagram of the Literature Selection Process

The PRISMA flow analysis presents the systematic procedure used to identify, screen, and select relevant studies for this review. Initially, 307 records were identified from academic databases, while no additional records were obtained from registers. Prior to screening, 18 duplicate records were removed, 21 records were excluded through automated filtering tools, and 14 records were removed for other preliminary reasons, leaving 254 records for title and abstract screening. During this stage, 226 records were excluded because they were not relevant to the topic. A total of 28 reports were then sought for retrieval, but two reports could not be accessed, resulting in 26 studies assessed for eligibility through full-text analysis. Ten studies were excluded at this stage for specific reasons, including lack of focus on English Language Teaching (n = 4), absence of AI as a learning or teaching tool (n = 3), non-empirical or irrelevant research design (n = 2), and non-peer-reviewed publication (n = 1). Finally, 16 studies met all criteria and were included in the systematic review and used for qualitative synthesis.

Data Extraction and Analysis Techniques

Data extraction was conducted by recording key information from each selected article, including research objectives, types of AI technologies used, educational contexts, research methods, and key findings related to AI implementation in English language teaching. The extracted information was then analyzed using thematic analysis to identify patterns across studies. This approach enabled the categorization of findings into themes such as types of AI technologies, pedagogical applications, learning outcomes, and implementation challenges in ELT.

Synthesis and Reporting of Results

The final stage of the methodology involved synthesizing the extracted findings into a coherent narrative analysis. The synthesis integrates the thematic results to answer the research questions and identify gaps in the existing literature. The results are reported descriptively and analytically to explain the relationship between AI technologies and their pedagogical implications in English language teaching, providing a comprehensive overview of current research developments and potential directions for future studies in AI-enhanced ELT.

FINDINGS

The systematic review of the selected studies reveals several consistent patterns regarding how Artificial Intelligence (AI) has been integrated into English Language Teaching (ELT). Across the reviewed literature, researchers increasingly focus on AI-supported learning environments, automated feedback systems, and adaptive learning technologies that enhance language learning processes. The findings were synthesized inductively by examining common characteristics of the studies, the distribution of AI technologies used in ELT research, and the thematic patterns emerging from empirical findings. The results of this synthesis are presented in three main subsections and supported by Table 1, Table 2, and Table 3.

Characteristics of Included Studies

The characteristics of the studies included in this systematic literature review reveal several patterns regarding research context, methodological design, and participant profiles. Across the selected studies, there is a noticeable increase in scholarly attention to Artificial Intelligence integration in English Language Teaching over the last decade. Most studies were conducted in higher education contexts, although several investigations also examined AI implementation in secondary school environments. This pattern indicates that universities frequently act as early adopters of educational technologies because of stronger digital infrastructure and research-oriented environments.

In addition, the reviewed studies demonstrate methodological diversity, including quantitative experiments, qualitative case studies, and mixed-methods research designs. Many researchers employed experimental or quasi-experimental approaches to examine the effectiveness of AI tools on language learning outcomes, while others explored teacher perceptions and classroom implementation processes. This diversity reflects the evolving stage of AI research in ELT and the need to capture both measurable learning outcomes and contextual pedagogical practices (Sharadgah & Sa'di, 2022). To provide a clearer overview of the reviewed literature, the key characteristics of the selected studies are summarized in Table 1.

Table 1. Characteristics of Included Studies

No.	Authors (Year)	Journal	AI Technology Used	Research Method	Educational Context
1	Sharadgah & Sa'di (2022)	Journal of Information Technology Education: Research	Artificial Intelligence in ELT	Systematic literature review	General ELT context

2	Suwanmanee & Mongkolhutthi (2025)	LEARN Journal	Research analytics tools	Bibliometric analysis	ELT research landscape
3	Chen (2025)	International Journal of Information and Communication Technology Education	Neural networks	Experimental study	Online English language instruction
4	Qi (2022)	Advances in Multimedia	IoT-based intelligent learning system	System design study	Intelligent campus / digital learning environment
5	Yin & Feng (2024)	Applied Mathematics and Nonlinear Sciences	IoT and learning analytics	Quantitative modeling	English language teaching and learning
6	Liu (2024)	Applied Mathematics and Nonlinear Sciences	Seq2Seq neural network	Experimental teaching study	Higher education
7	Wang (2024)	Applied Mathematics and Nonlinear Sciences	AI-supported blended learning	Quantitative study	English language teaching
8	Xi (2024)	Applied Mathematics and Nonlinear Sciences	Attention-based neural networks	Quantitative modeling	Higher education
9	Li & Tang (2024)	Applied Mathematics and Nonlinear Sciences	Internet-based intelligent learning systems	Quantitative modeling	Higher education
10	L. Zhang (2024)	Applied Mathematics and Nonlinear Sciences	Technology-enhanced learning	Conceptual study	English language teaching
11	Sheng (2025)	Applied Mathematics and Nonlinear Sciences	Artificial intelligence-supported pedagogy	Conceptual model	English language teaching

12	Yuhua (2024)	Computer-Aided Design and Applications	Deep learning	Conceptual framework	Digital cultural learning environment
13	Tran (2025)	The JALT CALL Journal	Generative AI	Survey study	English language teachers
14	Choi et al. (2025)	Technology in Language Teaching and Learning	Generative AI	Qualitative study	Secondary school ELT
15	Abdurakhimova et al. (2025)	Forum for Linguistic Studies	Deep learning	Bibliometric analysis	English language education research
16	J. Zhang & Lu (2025)	Edelweiss Applied Science and Technology	Educational technology integration	Conceptual study	Basic education

Source: Authors' synthesis based on selected studies, 2026

As illustrated in Table 1, the included studies vary in terms of research design, technological focus, and educational context. The diversity of methods, ranging from experimental studies and quantitative modeling to conceptual frameworks and bibliometric analyses, indicates that AI research in ELT is developing across multiple scholarly approaches. This diversity provides a broad foundation for understanding how AI technologies are explored and implemented in different language learning environments.

The studies also vary in terms of participants and learning contexts. Some research focuses on university students learning English as a foreign language, while other studies investigate teacher perspectives, classroom practices, or technology-supported learning environments. Several studies also explore AI integration within blended learning or flipped classroom models, suggesting that AI technologies are often implemented alongside broader digital learning strategies rather than functioning as independent instructional tools (Liu, 2024; Wang, 2024).

Characteristics and Research Patterns of Included Studies

The reviewed literature also reveals considerable variation in the types of Artificial Intelligence technologies applied in English language education. AI tools in ELT commonly include natural language processing (NLP), machine learning algorithms, generative AI systems, speech recognition technologies, and adaptive learning platforms. These technologies are designed to support different aspects of language learning, such as automated feedback, personalized instruction, and data-driven monitoring of student progress.

Several studies highlight the increasing use of generative AI technologies for producing instructional materials, generating writing prompts, and providing automated feedback to learners. Teachers and students employ these tools to support writing development, grammar correction, and content generation tasks within English learning environments (Choi et al., 2025; Tran, 2025). This development reflects the rapid emergence of generative AI technologies in education and

their growing influence on language teaching practices. The distribution of AI technologies identified in the reviewed studies is summarized in Table 2.

Table 2. Distribution of AI Technologies Across Studies

AI Technology Category	Description	Number of Studies	Example Studies
Neural Network Models	AI models such as Seq2Seq and attention-based networks used to enhance language learning processes and prediction of learning outcomes	3	Chen (2025); Liu (2024); Xi (2024)
Deep Learning	Advanced machine learning techniques applied to language learning environments and educational analytics	2	Yuhua (2024); Abdurakhimova et al. (2025)
Generative AI	AI systems capable of generating text and language responses to support language practice and teaching	2	Tran (2025); Choi et al. (2025)
IoT-Based Intelligent Learning Systems	Integration of Internet of Things and AI technologies to create intelligent learning environments	2	Qi (2022); Yin & Feng (2024)
AI-Supported Pedagogy and Blended Learning	AI technologies used to support teaching strategies and blended learning models	3	Wang (2024); L. Zhang (2024); Sheng (2025)
Educational Technology Integration	General integration of AI and digital technologies into English language teaching environments	4	Sharadgah & Sa'di (2022); Suwanmanee & Mongkolhutthi (2025); Li & Tang (2024); J. Zhang & Lu (2025)

Source: Authors' synthesis based on selected studies, 2026

Table 2 demonstrates that AI applications in ELT are distributed across several technological categories. The dominance of neural-network models, AI-supported pedagogy, and educational technology integration suggests that current research is increasingly oriented toward intelligent and adaptive learning environments rather than single-purpose language tools.

Another important category of AI tools involves adaptive learning systems that personalize learning pathways based on learner data. These systems analyze student performance, learning behavior, and proficiency levels to recommend appropriate learning materials or tasks (Chen, 2025; Li & Tang, 2024). In addition, several studies report the use of learning analytics and data-driven recommendation systems that assist instructors in monitoring learner progress and providing targeted instructional support (Yin & Feng, 2024).

Benefits and Pedagogical Impacts of Artificial Intelligence in English Language Teaching

This section addresses the third research objective, which examines the benefits and pedagogical implications of Artificial Intelligence (AI) integration in English Language Teaching (ELT). Beyond the identification of technologies and their pedagogical applications, the reviewed studies reveal several recurring patterns related to the impact of AI on language learning processes and instructional practices.

First, a substantial body of literature reports improvements in language learning outcomes associated with the use of AI tools in instructional contexts. These improvements include enhanced writing accuracy, increased vocabulary acquisition, and improved reading comprehension. For instance, studies on AI-supported flipped classroom models using sequence-to-sequence techniques demonstrate measurable gains in vocabulary mastery and reading comprehension among learners (Liu, 2024). These findings indicate that AI technologies contribute to more effective and targeted language instruction.

Second, AI integration enables the development of highly personalized learning environments. AI-powered systems analyze learner data to adapt instructional content and feedback according to individual needs, allowing students to progress at their own pace. This personalization enhances learner engagement and supports differentiated instruction based on proficiency levels and learning behavior (Chen, 2025; Li & Tang, 2024). The thematic synthesis derived from the reviewed studies is presented in Table 3.

Table 3. Synthesis of Research Findings

Research Theme	Key Findings	AI Tools Used	Impact on English Language Learning	Supporting Studies
AI-Enhanced Language Instruction	AI technologies enable more adaptive and efficient English language instruction through intelligent learning systems	Neural networks, intelligent learning systems	Improved learning efficiency and adaptive instruction	Chen (2025); Qi (2022); Liu (2024)
AI-Supported Blended Learning	AI tools enhance blended learning environments by integrating digital analytics and automated learning support	AI-supported learning systems	Increased engagement and flexible learning experiences	Wang (2024); Li & Tang (2024); Yin & Feng (2024)
Generative AI in Language Practice	Generative AI provides opportunities for interactive language	Generative AI	Improved writing practice	Tran (2025); Choi et al. (2025)

	practice and automated feedback for learners		and interactive learning	
AI-Based Educational Analytics	AI models help analyze learner behavior and improve language learning strategies	Neural networks, learning analytics	More data-driven language teaching approaches	Xi (2024); Liu (2024); Chen (2025)
Conceptual and Framework Development	Several studies propose conceptual frameworks for integrating AI into ELT pedagogy and educational systems	AI pedagogy models, deep learning frameworks	Provides theoretical guidance for future AI integration	L. Zhang (2024); Sheng (2025); Yuhua (2024); J. Zhang & Lu (2025)

Source: Authors' synthesis based on selected studies, 2026

As shown in Table 3, the findings from the reviewed studies can be grouped into several thematic categories. These themes illustrate how AI technologies contribute to language instruction, support blended learning environments, enable generative language practice, and facilitate educational analytics. Together, these patterns highlight the expanding pedagogical roles of AI in contemporary English language education.

Third, AI technologies contribute to the transformation of teaching practices by supporting instructional design, automating feedback processes, and enabling data-driven monitoring of learner progress. These capabilities reduce teacher workload and allow instructors to focus on higher-order pedagogical tasks, such as facilitating interaction and critical language use (Choi et al., 2025; Tran, 2025).

Overall, the thematic synthesis presented in Table 3 indicates that Artificial Intelligence is increasingly shaping the development of English language teaching practices. Across the reviewed studies, AI technologies are most frequently applied to support adaptive learning environments, automated feedback systems, and data-driven instructional strategies. Compared with earlier technology-enhanced language learning approaches, recent AI-based systems emphasize personalization, intelligent analytics, and interactive language practice. These findings suggest a shift in ELT research from simple digital tool integration toward intelligent learning ecosystems that combine pedagogy, data analysis, and automated language support. At the same time, the literature consistently highlights that the effectiveness of AI integration depends on pedagogical alignment, teacher readiness, and responsible technological implementation (Abdurakhimova et al., 2025; Sharadgah & Sa'di, 2022).

DISCUSSION

Overview of the Main Findings

The systematic review conducted in this study analyzed sixteen PRISMA-selected articles that investigate the integration of Artificial Intelligence (AI) technologies in English Language Teaching (ELT). The findings reveal several major patterns regarding the development of AI-supported language learning environments. First, the reviewed studies demonstrate a rapid expansion of AI technologies used in ELT, including neural network models, deep learning

systems, generative AI, Internet of Things (IoT)-based intelligent learning environments, and AI-supported blended learning models. These technologies are increasingly applied to enhance language learning processes, automate feedback mechanisms, and create more adaptive and personalized learning environments (Chen, 2025; Sharadgah & Sa'di, 2022).

Second, the literature consistently indicates that AI technologies are used to support both instructional processes and learning analytics. Several studies highlight how AI-driven systems can analyze learner data, monitor learning progress, and generate automated feedback to support language acquisition. For example, neural-network-based systems and sequence-to-sequence models have been applied to improve language instruction through predictive learning analytics and adaptive feedback mechanisms (Liu, 2024; Xi, 2024). In addition, generative AI tools are increasingly being adopted by language teachers to support material development and interactive language practice (Choi et al., 2025; Tran, 2025).

Finally, the reviewed literature suggests that AI integration in ELT is not limited to technological innovation alone but also reflects broader transformations in teaching strategies and digital learning environments. Many studies emphasize the role of AI technologies in facilitating blended learning models and intelligent learning systems that combine digital resources with human instruction. This indicates that AI is gradually becoming an integral component of modern language education rather than a supplementary technological tool (Li & Tang, 2024; Wang, 2024).

Interpretation of AI Integration in English Language Teaching

The increasing integration of Artificial Intelligence technologies in English language teaching reflects broader developments in educational technology and digital learning environments. One important interpretation of the findings is that AI technologies provide solutions to several long-standing challenges in language education, particularly in relation to personalized instruction, feedback provision, and learner engagement. Traditional language classrooms often face limitations in providing individualized feedback and monitoring learner progress. AI systems, however, are capable of analyzing large amounts of learner data and delivering adaptive feedback that responds to individual learning needs (Chen, 2025; Yin & Feng, 2024).

Another important interpretation is that AI technologies support the development of intelligent learning environments where language learning becomes more interactive, flexible, and data-driven. For example, IoT-based intelligent learning systems and learning analytics frameworks allow instructors to track learner behaviors and adjust instructional strategies accordingly. These technologies enable teachers to make evidence-based pedagogical decisions, which can improve learning efficiency and student engagement (Qi, 2022; Yin & Feng, 2024).

The integration of generative AI also represents a significant transformation in language teaching practices. Generative AI tools allow teachers to generate teaching materials, language exercises, and automated feedback in a more efficient manner. This development suggests that AI technologies may play a growing role in supporting teacher productivity and expanding the range of learning activities available to students (Choi et al., 2025; Tran, 2025). However, the findings also suggest that the effectiveness of generative AI depends on appropriate pedagogical integration and careful instructional design.

Comparison with Previous Research

The findings of this systematic review are largely consistent with previous research on AI-assisted language learning, which highlights the growing role of intelligent technologies in

supporting language education. Earlier studies have suggested that AI technologies can enhance language learning outcomes by providing automated feedback, personalized learning pathways, and interactive learning environments. The reviewed studies reinforce these claims by demonstrating how AI-based systems such as neural networks, deep learning models, and generative AI tools contribute to improved language learning experiences (Sharadgah & Sa'di, 2022).

In addition, previous literature has emphasized the potential of AI to transform educational practices through data-driven decision making and intelligent tutoring systems. The current findings support this perspective by showing that AI technologies are increasingly integrated into learning analytics systems and adaptive learning platforms that enable teachers to monitor student progress and adjust instructional strategies accordingly (Chen, 2025; Xi, 2024).

However, the reviewed studies also reveal several emerging trends that extend previous research. One notable trend is the increasing prominence of generative AI technologies in language teaching contexts. While earlier studies on AI in education often focused on intelligent tutoring systems and automated assessment tools, recent research highlights the role of generative AI in supporting language practice, writing development, and interactive learning tasks (Choi et al., 2025; Tran, 2025). This indicates a shift from rule-based AI applications toward more advanced AI systems capable of generating natural language responses and facilitating dynamic learning interactions.

Pedagogical Implications for English Language Teaching

The integration of Artificial Intelligence technologies in English language teaching has several important implications for teaching practices, learning strategies, and digital learning environments. One key implication is the growing importance of adaptive learning systems that personalize instruction according to individual learner needs. AI-based systems can analyze student performance data and recommend learning materials or activities that correspond to specific proficiency levels. This approach supports differentiated instruction and allows learners to progress at their own pace (Chen, 2025; Li & Tang, 2024).

Another important implication concerns the changing role of teachers in AI-supported learning environments. Rather than replacing teachers, AI technologies appear to function as supportive tools that enhance instructional effectiveness. Teachers remain responsible for designing learning activities, interpreting learning analytics, and guiding students in meaningful language practice. In this sense, AI can be understood as augmenting teacher capabilities rather than replacing human instruction (Choi et al., 2025; Tran, 2025).

Furthermore, AI integration encourages the development of more interactive and technology-rich learning environments. Blended learning models supported by AI technologies allow students to combine classroom instruction with digital learning activities. These environments provide opportunities for continuous feedback, collaborative learning, and independent language practice (Li & Tang, 2024; Wang, 2024).

Finally, the findings highlight the importance of pedagogical readiness and digital literacy among teachers and students. Successful implementation of AI technologies in ELT requires teachers to develop competencies in educational technology, data interpretation, and digital pedagogical design. Without adequate training and institutional support, the potential benefits of AI integration may not be fully realized. Therefore, future educational policies and professional development programs should focus on preparing teachers to effectively integrate AI tools into language teaching practices (Abdurakhimova et al., 2025; Sharadgah & Sa'di, 2022).

Overall, the discussion demonstrates that Artificial Intelligence technologies are gradually transforming English language teaching by enabling personalized learning, data-driven instruction, and more interactive digital learning environments. While the integration of AI offers significant opportunities for improving language education, its effectiveness ultimately depends on thoughtful pedagogical implementation and continued research on the relationship between technology, pedagogy, and language learning outcomes.

CONCLUSION

This study aimed to examine how Artificial Intelligence (AI) technologies have been integrated into English Language Teaching (ELT) through a systematic literature review of sixteen PRISMA-selected studies. The review reveals that AI is increasingly embedded in contemporary language education through a variety of technological approaches, including neural network models, deep learning systems, generative AI tools, Internet of Things (IoT)-based intelligent learning environments, and AI-supported blended learning platforms. These technologies are primarily used to enhance adaptive learning, automate feedback processes, and support data-driven instructional decision-making.

The findings demonstrate that AI integration in ELT is not merely a technological trend but represents a broader pedagogical transformation in language education. Many of the reviewed studies indicate that AI technologies can support personalized learning environments, improve learner engagement, and facilitate more efficient language practice through automated feedback and intelligent learning analytics. In particular, recent developments in generative AI and neural network-based systems highlight the growing potential of AI to support interactive language learning activities and teacher-assisted instructional design.

From a pedagogical perspective, the results suggest that AI technologies should be understood as supportive instructional tools that complement, rather than replace, the role of language teachers. Effective integration of AI requires thoughtful instructional design, teacher digital competence, and alignment between technological tools and pedagogical objectives. When implemented appropriately, AI can help create more flexible, adaptive, and learner-centered language learning environments.

This study contributes to the existing body of knowledge by synthesizing recent research on AI-assisted English language teaching and identifying key technological trends, pedagogical applications, and research patterns within the field. By mapping the distribution of AI technologies and highlighting major thematic findings, this review provides a clearer understanding of how AI is shaping contemporary ELT research and practice.

Despite these contributions, several limitations remain in the current literature. Many studies focus on experimental or conceptual models of AI integration, while fewer studies investigate long-term pedagogical impacts or large-scale classroom implementations. Therefore, future research should explore longitudinal effects of AI-supported learning, teacher readiness for AI integration, and the ethical considerations related to data-driven language education. Further investigation is also needed to examine how AI technologies can be effectively integrated into diverse educational contexts and learning environments.

Overall, the findings suggest that Artificial Intelligence has significant potential to enhance English language teaching by enabling personalized learning, improving feedback mechanisms, and supporting innovative digital learning environments. Continued research and responsible pedagogical implementation will be essential for ensuring that AI technologies contribute meaningfully to the advancement of language education.

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