

AI-Mediated Speaking Instruction in Saudi EFL Classrooms: A Systematic Review of Effectiveness and Learner Engagement

Farhan Ahmad¹, Sohaib Alam¹, Areig O. Mohamed², Jaafar Al Dawood³, Djamaldinova Shakhlo Obloberdiyevna⁴ & Tariq Rasheed¹

¹ Department of English Language and Literature, College of Sciences and Humanities, Prince Sattam Bin Abdulaziz University, Alkharj, Kingdom of Saudi Arabia

² Department of English Language and Translation, College of Arts, University of Hafar Al Batin, Saudi Arabia

³ Russian Language Department, Peoples' Friendship University of Russia (RUDN University), Moscow, Russia

⁴ Head of the Department of Uzbek Language and Literature with Russian, Candidate of Pedagogical Sciences PhD. Samarkand State Medical University Samarkand region, Samarkand city, Republic of Uzbekistan

Correspondence: Farhan Ahmad, Department of English Language and Literature, College of Sciences and Humanities, Prince Sattam Bin Abdulaziz University, Alkharj, Kingdom of Saudi Arabia.

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Abstract

Artificial intelligence (AI) mediated speaking technologies are increasingly being integrated into English as a Foreign Language (EFL) instruction within Saudi educational contexts, where they are promoted as innovative tools for enhancing speaking pedagogy. Although their use is increasing, comprehensive and integrated evidence on their pedagogical features and effects on learner engagement remains limited and disorganized. This paper presents a systematic review of empirical studies investigating the use of AI to enhance speaking skills in English classes in Saudi Arabia. After conducting thorough screening and eligibility assessments, 16 peer-reviewed research articles were examined through a methodical qualitative synthesis, with an emphasis on feedback systems, pedagogical methodologies, speaking proficiency enhancement, and student involvement. The review identifies recurring patterns in the implementation and experience of AI-supported speaking tools in instructional settings. Findings indicate that AI-mediated speaking instruction enhances opportunities for individualized practice, provides immediacy of corrective feedback, and supports sustained learner engagement, particularly in technology-supported learning environments. Students' perceptions, motivation, and acceptance of AI-enhanced speaking tools depend on educational settings, dependable systems, cultural significance, and teacher involvement. The review demonstrated the effects on speaking pedagogy, teacher training, and instructional design in AI-supported EFL settings.

Keywords: English as a foreign language, Artificial intelligence in education, educational technology, learning outcomes

1. Introduction

Artificial intelligence (AI) is increasingly anticipated to revolutionize educational frameworks by enhancing teaching effectiveness, expanding access to educational resources, and informing pedagogical decisions with data-driven insights, grounded in socio-constructivist learning theory and the Technology Acceptance Model (TAM). In the area of language education, the integration of AI-driven technologies presents significant advantages for enhancing skill acquisition, fostering learner independence, and enabling scalable instructional approaches (Chapelle, 2017; Godwin-Jones, 2018; Alam et al., 2025). However, these benefits are accompanied by important pedagogical and social considerations, particularly regarding instructional quality, fairness, and the overall learning experience (Kobylarek & Birova, 2026). The swift integration of artificial intelligence throughout and following the COVID-19 pandemic has further underscored both its potential and its limitations in technology-enhanced education (Bond et al., 2021). In the context of speaking instruction, there are valid concerns regarding dependence on automated feedback, reduced human interaction, and the capability of AI systems to adequately address the pragmatic and sociocultural aspects of oral communication (Derwing & Munro, 2015; Alam, 2025a; Akhter et al., 2025).

The discourse on the advantages and challenges of AI in education encompasses a diverse arrangement of stakeholders, including educators, students, institutions, and policymakers. These discussions have increasingly led to integrated responses that combine ethical AI use, teacher professional development, and institutional quality assurance mechanisms (Ofosu-Asare, 2025; Kukulska-Hulme et al., 2022; Williamson & Eynon, 2020). These methods are now more often seen as interconnected rather than isolated remedies. Contemporary research often visualizes AI-augmented learning as a vibrant instructional environment where technological instruments, human participants, educational objectives, and situational limitations engage in a dynamic interaction (Luckin et al., 2016; Alam et al., 2022). This viewpoint emphasizes the crucial necessity for thorough assessment frameworks that consider both technological capabilities and pedagogical dynamics, particularly in skill-oriented areas such as speaking (Kobylarek, 2025; Alam et al., 2026b; 2026c).

Even within a holistic perspective, the question of where and how to evaluate AI-mediated instruction remains unresolved. As AI-driven speaking tools transition from experimental phases to standard classroom applications, their educational impacts, student engagement trends, and relative advantages compared to teacher-led instruction grow more pronounced. A thorough systematic analysis is essential to uncover possible advantages and drawbacks early in the teaching process. Educational evaluation itself has a long tradition, including program evaluation (Stufflebeam, 2001), formative and summative assessment (Black & Wiliam, 2009), and technology evaluation in computer-assisted language learning (Chapelle & Jamieson, 2008). These well-founded methods lay the groundwork for a thorough analysis of AI-driven speaking instruction, focusing on educational outcomes, feedback dynamics, and student engagement (Alam, 2025b).

Recent empirical research provides examples of how AI-enhanced speaking instruction is being utilized in EFL environments, including Saudi Arabia. Studies have examined various aspects, including automated pronunciation helpers, speech-recognition feedback systems, and chatbots that simulate real-time conversations (Alharbi, 2020; Luckin et al., 2022). These studies typically report increased practice opportunities and positive learner perceptions, while also acknowledging limitations related to the depth of feedback and contextual sensitivity. While these studies offer valuable insights, they remain unfocused in terms of focus, approach, and metrics for evaluating results. To date, no systematic review has specifically examined AI-mediated speaking instruction within the Saudi EFL context. The variety of tools, teaching methods, and learner demographics clearly demonstrates the need for a thorough examination that gathers all the evidence and identifies common trends.

The significant national and institutional policies further emphasize the importance of methodically assessing AI-supported speaking education in Saudi Arabia. Educational transformation plans focus on innovative digital solutions, integrating technology, and, of course, enhancing English skills (Ministry of Education, 2023). In this grand scheme, AI-enhanced speaking tools are being used in large classrooms, scarce opportunities for speaking practice, and the increased workload. The systematic synthesis of existing research can, in the most basic terms, help institutions grasp those complex pedagogical implications, provide teachers with guidance for their informed instructional decision-making, and assist policymakers in aligning technology adoption with their educational goals. Just like any serious AI governance initiatives, it's essential to rely on evidence-based evaluation to guarantee that all this so-called innovation actually improves, rather than diminishes, the quality of instruction and the engagement of learners.

The primary aim of the present systematic review is to examine the pedagogical effectiveness and learner engagement outcomes associated with AI-mediated speaking instruction in comparison with traditional teacher-led approaches within Saudi EFL classrooms. This review is specifically designed to highlight the significant instructional advantages offered by AI-enhanced speaking tools, while also identifying the potential disparities and limitations that may arise from their deployment. These disparities may be attributed to differences in technological infrastructure, educator readiness, pedagogical integration, and learner accessibility within the Saudi educational landscape. Ultimately, this review aims to provide educators, learners, policymakers, curriculum designers, and institutional decision-makers with a comprehensive and evidence-based understanding of how AI-mediated speaking instruction is currently shaping EFL pedagogy in Saudi Arabia, and how it compares with established teacher-led practices.

The present systematic review addresses the following research questions:

- How do AI-mediated speaking instructions in Saudi EFL contexts affect feedback quality, learning processes, and speaking-skill outcomes?
- How do Saudi EFL learners perceive AI-supported speaking tools, and what factors influence their motivation, engagement, and effective participation in AI-mediated speaking instruction?

2. Methodology

The present study was conducted to systematically examine the pedagogical effectiveness and learner engagement outcomes associated with AI-mediated and, where applicable, compared with teacher-led speaking instruction in Saudi EFL contexts. The present study established a thorough review process based on the PRISMA guidelines (Moher et al., 2009; Page et al., 2021). This approach involved several phases, beginning with identifying our research focus and questions, followed by planning the review, conducting a thorough literature analysis, meticulously examining the identified studies, extracting key insights, and ultimately synthesizing a qualitative summary of present study findings. Comparative studies involving teacher-led instruction were included where available but were not a mandatory inclusion criterion. Each step was performed accurately to maintain transparency, reproducibility, and methodological validity, with ensuing sections specifying the approaches taken in the systematic review.

3. Search Strategy

A comprehensive and systematic search strategy was employed to identify empirical studies examining AI-mediated and teacher-led speaking instruction in Saudi EFL contexts. A variety of reputable academic databases were utilized to guarantee comprehensive literature coverage. Specifically, Scopus, Web of Science, ERIC, ScienceDirect, SpringerLink, Taylor & Francis Online, and Wiley Online Library were searched, as these repositories index high-quality research in applied linguistics, educational technology, and language education. Furthermore, Google Scholar was utilized to identify pertinent studies not available in subscription databases and to minimize publication bias. The present study used advanced search filters to find peer-reviewed journal articles published between 2021 and 2025, ensuring the evidence is both relevant and up-to-date (Piasecki et al., 2018). This timeframe was selected to capture the most recent developments in

AI-mediated language instruction, particularly following the rapid expansion of digital learning technologies during and after the COVID-19 pandemic.

A structured keyword-based search strategy was developed using Boolean operators, and, where applicable, controlled vocabulary was employed. Core search terms included combinations such as “artificial intelligence,” “AI,” “AI-mediated instruction,” “generative AI,” “speech recognition,” “automated feedback,” “chatbots,” and “intelligent tutoring systems”, paired with pedagogical descriptors including “speaking instruction,” “oral skills,” “oral proficiency,” “EFL speaking,” and “language learning.” To ensure contextual specificity, these terms were further combined with “Saudi Arabia,” “Saudi EFL,” and “EFL classrooms.” Searches were conducted within article titles, abstracts, and keywords. This strategy was designed to capture a comprehensive range of empirical studies addressing pedagogical effectiveness, learning processes, and learner engagement associated with AI-supported speaking instruction in comparison with traditional teacher-led approaches.

4. Eligibility Criteria

Clearly defined eligibility criteria were established to delineate the scope of this systematic review and to ensure methodological rigor and relevance to the research objectives. These criteria aim to inclusively gather studies on AI-mediated and teacher-led speaking instruction in Saudi EFL settings, while excluding unrelated research. The inclusion criteria were as follows:

- The study should have employed empirical research methods, including quantitative, qualitative, or mixed-methods designs, with explicit data collection and analysis procedures.
- The research must have been conducted in an educational setting, including secondary or higher education, where EFL speaking instruction constituted a central instructional component.
- A core inclusion requirement was the explicit use of artificial intelligence in the teaching or learning of speaking skills, such as AI-driven speech-recognition tools, automated oral feedback systems, conversational agents, or generative AI applications, with empirically reported outcomes.
- The study should have focused on English as a Foreign Language (EFL) speaking instruction, with particular relevance to the Saudi Arabian context.
- Only studies published between 2021 and 2025 were included to capture recent developments in AI-mediated language instruction.

The exclusion criteria were applied to maintain analytical precision and consistency. Specifically, the review excluded:

- Studies that were non-empirical in nature, including conceptual papers, literature reviews, editorials, and opinion pieces.
- Publications written in languages other than English.
- Studies that did not clearly situate AI use within a speaking or oral language-learning context.
- Research that lacked full-text availability, including conference abstracts or summaries without complete methodological and results reporting.

5. Quality Assessment of Included Studies

To ensure methodological rigor and to evaluate the credibility of the evidence base, the quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT) (version 2018). The MMAT is specifically designed for systematic reviews that include qualitative, quantitative, and mixed-methods studies, making it suitable for the diverse methodological designs represented in this review.

The appraisal process involved the application of five core methodological criteria for each study, depending on its research design. These criteria included: (1) appropriateness of the research design to the research question, (2) adequacy of the sampling strategy, (3) quality and reliability of data collection methods, (4) rigor of data analysis procedures, and (5) coherence between data, analysis, and interpretation of results. Each study was evaluated against these criteria and assigned a rating based on the number of criteria met.

Studies meeting four to five criteria were classified as high quality, those meeting two to three criteria were classified as moderate quality, and those meeting fewer than two criteria were classified as low quality. This classification enabled a structured assessment of the overall strength of evidence and supported the interpretation of findings in relation to methodological robustness.

The results of the quality assessment are presented in Table 1, which provides a detailed overview of each study’s methodological characteristics and appraisal outcomes.

Table 1. Quality Assessment of Included Studies (n = 16)

Author (Year)	Methodology	Sample Size	AI Tool Type	Criteria Met (out of 5)	Quality Level
Abdelhalim & Alsehibany (2025)	Experimental	60	Speech recognition	5	High
Salsabil et al. (2025)	Experimental	45	AI voice chatbot	4	High
Alotaibi et al. (2025)	Quantitative	120	ChatGPT	4	High
Almutairi & Alghammas (2025)	Experimental	50	ELSA app	4	High
Alenazi (2024)	Quantitative	100	AI readiness tools	3	Moderate
Aldosari (2024)	Mixed-methods	80	AI speaking tools	4	High
Gorian & Osman (2024)	Qualitative	30	AI systems	3	Moderate

Author (Year)	Methodology	Sample Size	AI Tool Type	Criteria Met (out of 5)	Quality Level
El Zahraa (2024)	Qualitative	25	AI-based tools	3	Moderate
Almulla (2024)	Quantitative	90	ChatGPT	4	High
Alhalangy & AbdAlgane (2023)	Case study	40	AI tools	3	Moderate
Qassrawi et al. (2024)	Mixed-methods	70	AI applications	4	High
Amir et al. (2025a)	Experimental	55	AI-supported learning	4	High
Amir et al. (2025b)	Experimental	65	MALL + AI	4	High
Farooqi (2025)	Experimental	50	SmallTalk2Me	3	Moderate
Altamimi (2025)	Qualitative	35	AI tools	3	Moderate
Alharbi (2025)	Qualitative	30	AI-supported instruction	3	Moderate

6. Screening Process

The screening process was conducted during November and December 2025 following a structured, multi-stage procedure in accordance with PRISMA 2020 guidelines to ensure transparency and consistency. The initial database search yielded a total of 7,867 records related to artificial intelligence in EFL instruction. All records were exported to a reference management system, where 1,245 duplicate entries were identified and removed, resulting in 6,622 unique records.

The remaining records were screened based on publication year and title. At this stage, 6,494 studies were excluded because they were either published outside the specified timeframe or were not directly related to AI-mediated speaking instruction. Following this screening, 128 studies were identified as potentially relevant to the Saudi EFL context and aligned with the research objectives.

Subsequently, full-text versions of these 128 studies were assessed for eligibility. During this stage, 41 studies were excluded because they did not focus on EFL speaking instruction or lacked a clear pedagogical application of artificial intelligence. The remaining 87 studies underwent detailed full-text evaluation.

In the final stage of screening, 71 studies were excluded due to insufficient empirical evidence, lack of methodological rigor, or misalignment with the research objectives. As a result, a total of 16 empirical studies met all inclusion criteria and were included in the final synthesis.

The complete screening procedure is illustrated in Figure 1 (PRISMA flow diagram), which presents a detailed account of records identified, screened, excluded, and included at each stage.

Table 2. Articles included in the systematic review

S. No.	Author(s)	Year
1	Alhalangy & AbdAlgane	2023
2	Almulla	2024
3	Alenazi	2024
4	El Zahraa	2024
5	Gorian & Osman	2024
6	Aldosari	2024
7	Amir <i>et al.</i>	2025a
8	Qassrawi <i>et al.</i>	2024
9	Alotaibi <i>et al.</i>	2025
10	Abdelhalim & Alsehibany	2025
11	Farooqi	2025
12	Alharbi	2025
13	Almutairi & Alghammas	2025
14	Altamimi	2025
15	Amir <i>et al.</i>	2025b
16	Salsabil <i>et al.</i>	2025

7. Data Extraction Procedure

A structured data extraction process was employed to ensure consistency and systematic analysis across the included studies. Relevant information was extracted from each study using a predefined coding framework. The extracted variables included: author(s) and year of publication, research design, participant characteristics, sample size, type of artificial intelligence tool used, instructional context, targeted speaking skills, outcome measures, and key findings related to learning outcomes and learner engagement.

This structured approach enabled the organization and comparison of findings across studies and supported the thematic synthesis of results presented in the findings and discussion sections.

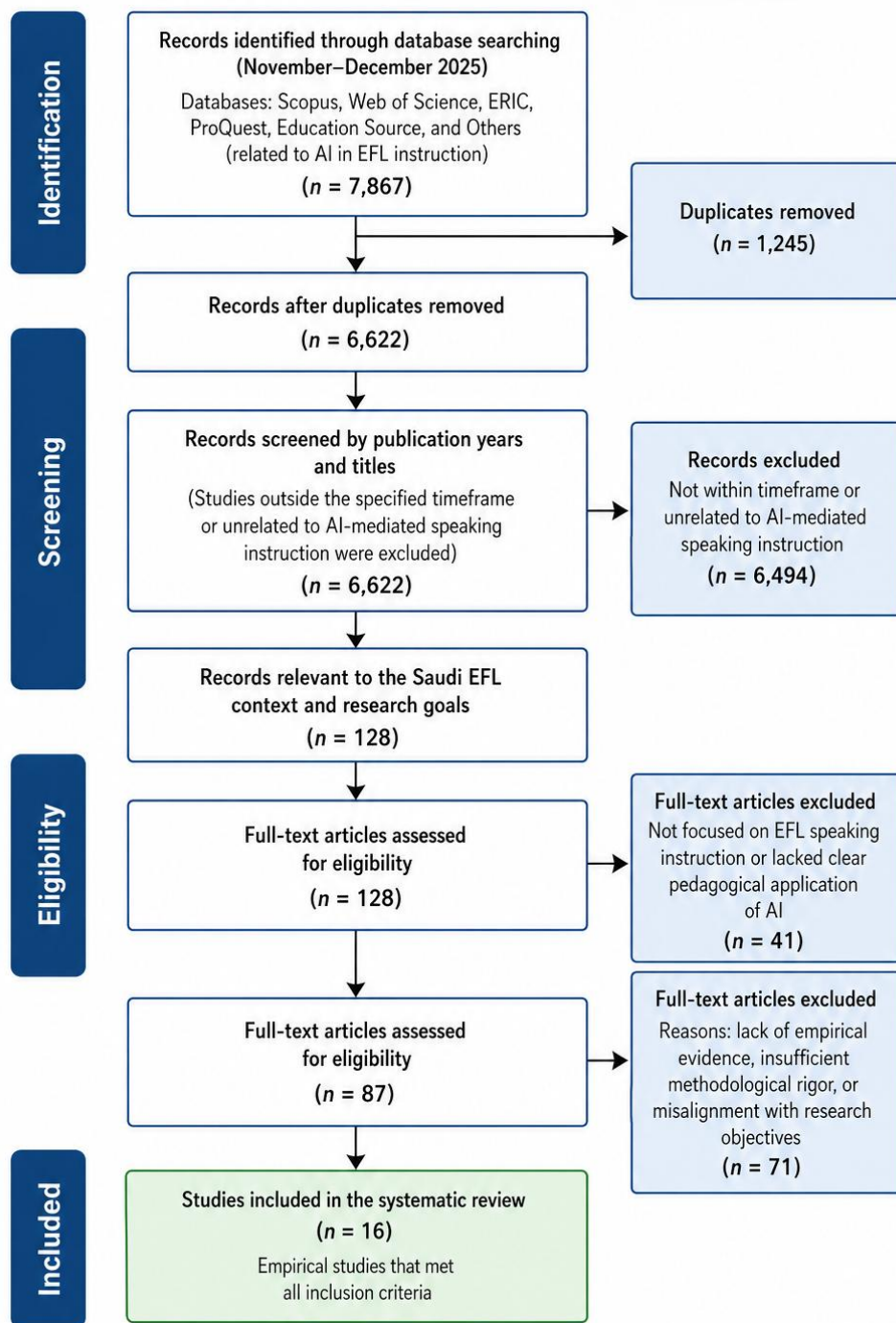


Figure 1. PRISMA Review Process

8. Findings

In the present systematic review, a total of sixteen (16) empirical studies examining the integration of artificial intelligence (AI) in English as a Foreign Language (EFL) speaking instruction were critically analysed. The included studies exhibited methodological diversity, utilizing quantitative, qualitative, and mixed-methods approaches, thereby reflecting a rich illustration of modern AI-enhanced language learning research. An examination of the publication timeline reveals a notable increase in academic interest in AI-enhanced speaking instruction, which experienced significant growth within a dynamic of three-year period from 2023 to 2025. In 2025, a significant increase in scholarly output was observed with eight (08) publications, indicating a prominent apex in academic contributions. This was followed by seven (07) studies in 2024, while only one (01) study was identified in 2023, highlighting the relatively emerging stage of empirical inquiry during the initial phase of this timeframe. The annual increase in publications highlights the growing recognition of the effectiveness of AI mediated technologies in improving EFL speaking competencies. A detailed overview of the year-wise distribution of the included studies is presented in Figure 2.

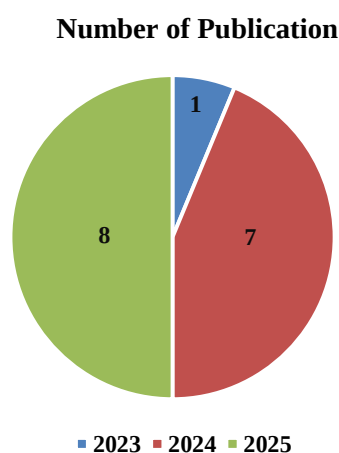


Figure 2. The number of publications year-wise

The review process of the present study synthesized findings corresponding to four distinct research questions, each of which is addressed independently in the subsequent sections.

RQ1: Impact on Learning Outcomes in AI-Mediated EFL Speaking Instruction

The first research question of the present systematic review addressed the primary objective of examining the reported impact of AI mediated instruction on EFL learners' speaking outcomes. The analyzed empirical research indicates that AI technologies have been integrated into EFL speaking pedagogy to achieve various educational objectives, including improving pronunciation, enhancing fluency, enabling interactive speaking tasks, providing automated feedback, and stimulating learner motivation. Across the reviewed literature, AI applications such as speech-recognition systems, conversational chatbots, generative AI tools, and intelligent feedback platforms were used to simulate authentic interaction, provide immediate corrective feedback, and increase opportunities for oral practice beyond traditional classroom constraints (Alhalangy & AbdAlgane, 2023; Almulla, 2024; Qassrawi et al., 2024; Amir et al., 2025a). These functions exemplify a progressive educational emphasis on utilizing AI to address persistent challenges in EFL speaking instruction, particularly in terms of time limitations, student apprehension, and delayed feedback (Shams et al., 2025a).

The results indicate that AI-enabled speaking guidance significantly boosts learners' verbal abilities. Studies employing experimental and quasi-experimental designs reported significant improvements in learners' speaking fluency, pronunciation accuracy, and overall oral proficiency following exposure to AI-mediated instruction, as compared to traditional instructional conditions (Abdelhalim & Alsehibany, 2025; Salsabil et al., 2025; Alam, Ahmad & Biryukova, 2025). Frequent use of AI tools and receipt of quick feedback has really helped people to communicate clearly and smoothly. Similar command over fluency were observed in studies conducted in Saudi and broader EFL contexts, where AI tools enabled learners to practice speaking independently and at their own pace (Alotaibi et al., 2025; Almutairi & Alghammas, 2025).

In addition to linguistic outcomes, several studies highlighted positive affective and motivational benefits of AI-mediated speaking instruction. Learners reported increased confidence, reduced speaking anxiety, and greater willingness to communicate when engaging with AI tools, particularly those offering non-judgmental and daily practice environments (Alenazi, 2024; El Zahraa, 2024; Gorian & Osman, 2024). Students felt comfortable using AI as a practice tool without worrying about being judged. Studies focusing on learner perceptions have further indicated that AI-supported speaking tasks enhance engagement and confidence, thereby indirectly contributing

to improved speaking performance (Aldosari, 2024; Qassrawi et al., 2024).

Although most studies yielded effective outcomes, there were some differences in their effectiveness. Differences were reported in the extent to which AI tools supported higher-level speaking features, such as discourse organization, pragmatic appropriateness, and suprasegmental pronunciation (Abdelhalim & Alsehibany, 2025; Farooqi, 2025). Some studies have cautioned that while AI systems are effective in supporting practice and feedback, their pedagogical impact largely depends on instructional design, task alignment, and teacher mediation (Alharbi, 2025; Altamimi, 2025; Beg et al., 2025). Educators are concerned that relying too heavily on automated feedback and AI may not fully capture the art of spoken conversations (Alam et al., 2026a). Essentially, these results demonstrate that AI can significantly enhance EFL speaking skills, provided it is utilized effectively in teaching to achieve optimal results.

RQ2: Learners' Perceptions, Engagement, and Affective Responses to AI-Mediated EFL Speaking Instruction

The second research question focused on examining learners' perceptions, engagement levels, and affective responses toward the use of artificial intelligence in EFL speaking instruction. Across the reviewed studies, learner perceptions of AI-mediated speaking tools were predominantly positive, with students frequently describing AI applications as supportive, engaging, and accessible resources for oral language practice. AI tools were perceived as facilitating increased interaction opportunities through simulated dialogue, voice-based feedback, and conversational practice, which learners considered particularly beneficial in contexts where classroom speaking opportunities were limited (Alhalangy & AbdAlgane, 2023; Almulla, 2024; Qassrawi et al., 2024). Most students view AI as helpful realia for teachers, rather than a full replacement.

According to studies, using AI for speaking lessons significantly enhances student engagement. Students reported higher levels of participation, sustained interest, and increased time-on-task when engaging with AI-powered speaking activities, especially those involving conversational chatbots and speech-recognition systems (Gorian & Osman, 2024; Aldosari, 2024; Alotaibi et al., 2025). AI tools are great for practicing speaking since they allow you to try things out without worrying about being judged right away. In several studies, this heightened level of engagement was linked to learners' perception of AI tools as flexible and learner-controlled environments that allowed self-paced practice and autonomous learning (Alenazi, 2024; Altamimi, 2025; Shams et al., 2025b).

In terms of affective variables, the reviewed studies consistently reported reductions in speaking anxiety and increases in learner confidence and willingness to communicate. Learners indicated that interacting with AI systems reduced the psychological pressure commonly associated with public speaking, thereby creating a low-anxiety environment conducive to oral practice (El Zahraa, 2024; Almutairi & Alghammas, 2025; Amir et al., 2025b). These affective benefits were particularly evident among learners with lower-proficiency or introverted, who reported feeling more comfortable when practicing speaking with AI interlocutors. Abdelhalim and Alsehibany (2025) further noted that real-time feedback and repeated exposure contributed to learners' sense of control over their speaking development, reinforcing positive attitudes toward AI-supported instruction.

Despite generally favourable positive perceptions, several studies also documented learner concerns and reservations regarding AI-mediated speaking instruction. Learners reported some obstacles with speech recognition, including instances where it failed to capture the context correctly and technical issues that disrupted the conversation flow (Alam et al., 2024; Farooqi, 2025). Some learners expressed preference for blended approaches that combined AI tools with teacher feedback, emphasizing the continued importance of human guidance for nuanced communicative development (Alharbi, 2025; Abdelhalim & Alsehibany, 2025). The results show that students find AI mediated speaking support fun and useful, but it only works well if the tech is reliable, the teaching fits, and the lessons are balanced.

9. Discussion

The primary objective of this review was to investigate the interaction between artificial intelligence and EFL speaking instruction. This study revealed various ways AI is being utilized in EFL teaching, including chatbots, speech recognition, AI generators, and smart feedback tools. The findings suggest that incorporating AI tools into EFL speaking lessons significantly enhances students' speaking abilities. These improvements were evident in increased speaking fluency, improved pronunciation accuracy, and stronger overall oral proficiency in many studies, particularly when compared to traditional instructional environments characterized by limited speaking opportunities and delayed feedback; however, some studies reported mixed or context-dependent outcomes, especially for higher-order speaking skills (*HOTS*) such as discourse organization and pragmatic competence, where teacher-led instruction remained more effective (Alhalangy & AbdAlgane, 2023; Almulla, 2024; Abdelhalim & Alsehibany, 2025; Salsabil et al., 2025). Overall, AI-mediated instruction demonstrated advantages in providing immediate feedback, increased practice opportunities, and learner autonomy, whereas teacher-led instruction showed strengths in delivering context-sensitive feedback, addressing sociocultural nuances, and supporting complex communicative competence. From a socio-constructivist perspective, these findings indicate that AI tools effectively support interaction-based speaking practice and scaffolded learning experiences, although human instructors remain more capable of facilitating sociocultural and pragmatic dimensions of communication that require contextual understanding and interpersonal negotiation.

Incorporating AI into language education enhances complex speaking abilities through enriched interactions, valuable feedback, and meaningful engagement (Swain, 2006; Saito & Plonsky, 2019). AI-supported speaking environments further contribute to the development of speech monitoring and automaticity, which are critical for fluent oral production (DeKeyser, 2017; Almulla, 2024). Moreover, several studies indicate that language instructors employ AI-driven tools to increase learner engagement and sustain motivation during speaking tasks, particularly through interactive dialogue and simulated conversational scenarios (Fryer et al., 2020; Holmes et al.,

2022; Gorian & Osman, 2024). These findings can be interpreted through socio-constructivist learning theory (Vygotsky, 1978), which emphasizes interaction and active engagement as central to language development, thereby explaining the effectiveness of AI-mediated conversational practice. In this regard, AI-supported speaking platforms may function as collaborative learning environments where learners actively construct linguistic knowledge through interaction, feedback, and repeated communicative exchanges. AI tools such as chatbots and simulated conversational systems may additionally provide scaffolding within learners' zone of proximal development by supporting guided interaction and corrective feedback. AI-driven personalized learning narrows the gap between learners of varying skill levels by allowing for tailored pacing and practice opportunities (Dörnyei & Ryan, 2015). This aligns with the principles of self-determination theory, where autonomy and individualized learning pathways enhance intrinsic motivation and learner persistence. More specifically, Self-Determination Theory explains that AI-supported speaking environments may fulfill learners' psychological needs for autonomy, competence, and relatedness. Learners experience autonomy through self-paced speaking practice, competence through immediate corrective feedback, and relatedness through interactive conversational engagement, thereby strengthening motivation and sustained participation.

Moreover, tailored AI feedback boosts learner enthusiasm and commitment in speaking exercises (Ifenthaler & Yau, 2020). These findings may also be interpreted through the Technology Acceptance Model (TAM), which suggests that learners are more likely to adopt and continuously engage with AI-supported speaking applications when they perceive them as useful for improving oral proficiency and easy to use during speaking practice.

This review indicates a strong prevalence of research in higher education EFL environments, overshadowing university prep and teacher training contexts. A scarcity of research on AI-enhanced speaking education in primary and secondary schools reveals a lopsided scholarly terrain (Zawacki-Richter et al., 2019). Similarly, certain dimensions of speaking competence, such as pragmatic appropriateness, discourse-level coherence, and interactional management, received comparatively limited empirical attention (Farooqi, 2025; Abdelhalim & Alsehibany, 2025). From a theoretical perspective, this imbalance may be attributed to the greater alignment of AI tools with measurable linguistic outcomes (e.g., fluency and pronunciation) rather than complex sociocultural competencies, which are better supported through human-mediated instruction (Kobylarek et al., 2022). This observation further supports socio-constructivist assumptions that socially negotiated and context-sensitive communicative competencies require interpersonal interaction and authentic communicative contexts that current AI systems may not fully replicate. These trends underscore the necessity for further scholarly inquiry.

The research landscape reveals striking inequalities across regions. A substantial proportion of the reviewed studies were conducted in technologically advanced regions, particularly in the Middle East and parts of Asia, while relatively few studies originated from low-resource or developing educational contexts (Alotaibi et al., 2025; Altamimi, 2025). The varying focus on AI in education could be attributed to disparities in tech resources, research investment, and institutional emphasis (Zhai et al., 2021; Holmes et al., 2022). Such disparities could impact the reach and relevance of AI-driven speaking education, leading to unequal advantages in diverse EFL environments worldwide. From the perspective of the Technology Acceptance Model, limited technological infrastructure and restricted institutional support in low-resource contexts may negatively influence perceived ease of use and perceived usefulness, thereby reducing the likelihood of successful AI adoption in EFL speaking instruction.

The study revealed that integrating AI tools into learning settings sparked heightened enthusiasm and participation in speaking tasks among learners. This increased engagement is attributed to AI's ability to deliver tailored prompts, immediate feedback, and simulated interactions, thereby making speaking practice more interactive and less intimidating (MacIntyre et al., 1998). Students found AI speaking tools helpful, enhancing their confidence, fluency, and communication skills (Kasneci et al., 2023). Several studies also reported learners' willingness to continue using AI-supported speaking tools beyond formal instructional settings, suggesting sustained acceptance and perceived value (Aldosari, 2024; Almutairi & Alghammas, 2025). These findings reinforce the assumptions of Self-Determination Theory and TAM, as learners' sustained participation appears to be associated with increased motivation, perceived competence, and positive perceptions regarding the usefulness and accessibility of AI-supported speaking tools.

Parallel to learner perceptions, instructors demonstrated predominantly positive attitudes toward integrating AI tools in EFL speaking instruction. Teachers associated AI use with enhanced learner engagement, improved instructional efficiency, and greater flexibility in designing speaking tasks and assessments (Alharbi, 2025; Altamimi, 2025). From the perspective of the Technology Acceptance Model, educators' willingness to adopt AI technologies is strongly influenced by perceived usefulness and ease of use (Davis, 1989; Venkatesh et al., 2003). Teachers in the reviewed studies were more likely to value AI tools when they improved instructional efficiency, simplified speaking-task preparation, and increased learner participation, thereby demonstrating the practical relevance of TAM in explaining technology adoption in EFL instruction. Generative AI tools, particularly ChatGPT, were perceived as valuable resources for creating speaking prompts, role-play scenarios, rubrics, and formative assessment materials, thereby supporting pedagogical innovation (Kasneci et al., 2023; Alotaibi et al., 2025).

Despite the documented benefits, the discussion must also acknowledge challenges related to AI's adaptability to linguistic complexity and communicative context. Many studies have highlighted limitations in AI systems' ability to process accented speech, interpret pragmatic intent, and respond appropriately to extended discourse, which may constrain their effectiveness in advanced speaking instruction (Bender et al., 2021; Farooqi, 2025). AI systems are bounded by their training data, hindering their adaptability to changing language and cultural norms (Cooper, 2023). Uniform AI methods may overlook the intricate needs of various EFL speaking contexts,

underscoring the need for flexible, context-aware teaching strategies. From a socio-constructivist perspective, these limitations suggest that AI systems may struggle to replicate the socially situated and context-dependent nature of authentic human communication.

The insights from this review are pivotal for shaping teacher training and growth in AI-driven language learning. Empowering teachers with the expertise to thoughtfully assess, modify, and ethically apply AI tools is crucial for enhancing their teaching prowess (Antonenko & Abramowitz, 2023). Although AI can revolutionize EFL speaking teaching, its effective use depends on educational harmony, institutional backing, and ethical oversight. Providing teachers with appropriate training and clear guidelines can boost their confidence and help them utilize AI effectively, ultimately enhancing EFL speaking instruction. Furthermore, strengthening teachers' technological confidence and perceptions of AI usefulness may positively influence AI adoption and instructional integration, which is consistent with the assumptions of the Technology Acceptance Model.

10. Limitations

Several inherent limitations of the present systematic review should be acknowledged. As with other systematic reviews, the findings are influenced by the selected search strategy and keyword combinations. Although a considerable amount of work went into selecting suitable keywords for AI and EFL speaking, the use of alternative or broader search terms may have identified additional relevant studies. Second, the review was limited to a selected set of academic databases to ensure the inclusion of peer-reviewed and methodologically sound empirical research. This approach enhanced the validity of the research, yet it may have excluded relevant studies indexed in other databases. Future reviews may consider expanding database coverage to enhance comprehensiveness while maintaining quality standards. In addition, grey literature, including dissertations and unpublished studies, was not included, which may limit the scope of emerging evidence in this field. As a result, some relevant insights may not be fully represented in this review, and subsequent reviews could gain significantly by integrating a wider range of publication sources.

11. Conclusion

This systematic review examined the impact, perceptions, and challenges associated with the integration of artificial intelligence (AI) in EFL speaking instruction within Saudi educational contexts. The findings indicate that AI-mediated speaking instruction offers measurable pedagogical benefits while also presenting identifiable limitations. The implementation of AI-driven speaking instruction has shown remarkable benefits for learners' speaking growth by enhancing chances for verbal practice, providing prompt and tailored feedback, and igniting learner involvement and enthusiasm. Learners and instructors generally reported positive perceptions of AI-supported speaking tools. Nevertheless, several challenges were evident, including the limited capacity of artificial intelligence to address practical and conversational aspects of spoken communication, its variable adaptability in diverse educational settings, and inconsistencies in performance across various AI platforms. Additionally, concerns related to ethical use, overreliance on automated feedback, and pedagogical alignment remain critical considerations. These findings suggest that effective implementation of AI in EFL speaking instruction requires careful pedagogical integration, teacher support, and context-sensitive application. Therefore, educators and policymakers are encouraged to confront these challenges directly to fully harness the capabilities of AI in EFL speaking instruction, all while maintaining high educational standards, ethical principles, and delivering meaningful learning experiences for students. Future research should further investigate AI applications in underexplored contexts, including primary and secondary education and low-resource settings, to enhance the generalizability and inclusiveness of findings.

Based on the findings of this review, several practical recommendations can be proposed for the effective integration of AI in EFL speaking instruction. First, educational institutions should provide structured professional development programs that equip teachers with the pedagogical and technical competencies necessary for the effective and ethical use of AI-supported speaking tools. Second, AI technologies should be integrated as supplementary instructional resources rather than complete replacements for teacher-led interaction, particularly in areas involving sociocultural communication and pragmatic competence. Third, policymakers and institutions should establish clear ethical guidelines concerning data privacy, responsible AI use, and balanced dependence on automated feedback systems. Fourth, developers and educators should collaborate to design context-sensitive AI applications that accommodate diverse linguistic and cultural speaking contexts. Fifth, educational institutions should strengthen technological infrastructure and ensure equitable access to AI-supported learning resources across diverse educational settings.

Future research directions should also be expanded. First, future studies should examine the effectiveness of AI-supported speaking instruction in underexplored educational contexts, particularly primary education, secondary education, and low-resource learning environments. Second, longitudinal investigations are needed to evaluate the long-term effects of AI-mediated speaking practice on communicative competence, learner autonomy, speaking confidence, and sustained motivation. Third, future research should explore the capacity of emerging generative AI technologies to support higher-order speaking skills, including pragmatic competence, discourse organization, interactional management, and authentic conversational communication.

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Authors Contributions

Dr. SA and Dr. FA were responsible for study design and revising. Dr. AOM, Dr. JD, DSO, Dr. TR was responsible for revising and

drafting the manuscript. All authors read and approved the final manuscript. All authors equally contributed in the manuscript with their insights and regular discussions. All authors contributed equally to writing, editing, and proofreading the manuscript.

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