International Journal of Innovative Research and Scientific Studies, 8(2) 2025, pages: 4637-4649

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

Revolutionizing speaking skills improvement: AI's role in personalized language learning

Lam Ky Nhan[1*], Nguyen Thi My Hoa[2], Luong Vo Nhat Quang[3]

[1,2,3]*Nam Can Tho University, Vietnam.*

Corresponding author: Lam Ky Nhan (*Email: kynhan0203@gmail.com*)

Abstract

Artificial Intelligence (AI) integration into language learning and teaching has been an area of educational research interest with a focus on developing speaking skills. With the promising capability of AI-powered tools to address Foreign Language Anxiety (FLA), facilitate self-regulated learning, and provide customized instruction, there is a growing but limited empirical investigation into the effects of these technologies on real-world language learning. It will explore the potential of AI-assisted Language Tools in tackling these challenges and improving speaking proficiency. The study employed a mixed methods approach to capture qualitative and quantitative data from language learners who were using AI-powered speaking platforms. Results show that AI tools help alleviate foreign language anxiety (FLA) by offering an environment that is low-stakes and free of judgment, allowing learners to speak readily, fostering a sense of more confidence and willingness to practice speaking. Moreover, the research underscores the significance of AI in promoting self-regulated learning by providing personalized constructive feedback and adaptive learning environments, thus enabling students to self-monitor their advancement and develop their speaking competencies independently. AI systems can tailor instruction to the needs of the individual learner, allowing for more inclusive and targeted language learning experiences, the research also indicates. This study puts a spotlight on how AI technologies need to be integrated into language curricula, especially for learners who face language barriers or psychological barriers such as anxiety in their journey to learning a new language.

Keywords: Artificial intelligence, foreign language anxiety, language learning, personalized instruction, self-regulated learning, speaking skills, technology integration.

DOI: 10.53894/ijirss.v8i2.6408
Funding: This study received no specific financial support.
History: Received: 11 March 2025 / **Revised:** 15 April 2025 / **Accepted:** 17 April 2025 / **Published:** 23 April 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Publisher: Innovative Research Publishing

1. Introduction

Artificial Intelligence (AI) has become one of the most transformative forces in all areas of our lives over recent years, including language education, drastically changing how speaking skills are developed and assessed. This has become of

interest to researchers and educators, as AI-powered tools advance and increasingly become a means to support language learners, especially for oral and communication skills. Not only would the development of AI-reliant language learning instruments alleviate prevalent problems, such as Foreign Language Anxiety (FLA), create space for self-regulated learning, and provide tailor-made teaching [1, 2]. The most relevant innovations to come from these technologies have the potential to generate dynamic and rather inclusive environments for language learning that can be tailored to the needs and backgrounds of a more diverse group of learners.

AI's potential to alleviate FLA is especially crucial. Research has suggested that anxiety is a contributor that negatively impacts spoken discourse by language learners [2]. In this regard, AI tools provide a low-stakes and judgment-free context toward speaking practice where learners are free to fail without worrying about what others might think, and can build confidence through practice and repetition [1]. Furthermore, the personalized feedback generated by AI into regular lessons helps facilitate a self-regulated learning process that enables students to manage their own learning and their own areas of study Qin and Zhong [3]. AI systems can adapt to learners by customizing the content being taught and the pace at which the information is presented, keeping pace with an individual's advancement, potentially providing even more value [3].

Although research is accumulating with experiences and studies showing how to effectively utilize AI for language learning purposes, we are still somewhat lacking in the practical field where we can explore the use of AI and its effect on speaking skills in EFL contexts. Though AI is recognized as having the potential to revolutionize the way we acquire language, the ways in which it enhances speaking performance are yet to be well understood. Hence, this research focuses on the effectiveness of AI-aided tools for learning new languages as well as fills the missing knowledge regarding it. The study seeks to answer the following research questions:

1. How do AI-powered language tools influence learners' perceptions of Foreign Language Anxiety (FLA) and their confidence in speaking?
2. In what ways do AI systems contribute to the development of self-regulated learning and personalized instruction in speaking skills?

2. Literature Review

2.1. Speaking Skills in Language Learning

Speaking skills play an important role in language learning, as they are a necessary part of communication. In fact, speaking is considered one of the top skills that learners of any language, especially those in English as a Second Language (ESL) or English as a Foreign Language (EFL) contexts, should master [4, 5]. Mastering speaking skills is actually one of the crucial aspects that affect the effectiveness of how the language can be used in real life [4], and Richards agrees with this statement. In addition, scholarly works recommend that speaking fluency is relevant to adjusting to the culture and interaction patterns in conversation, which are part of the linguistic fluency [6, 7]. Active learning strategies are among the methods to promote students' speaking skills by creating vibrant classrooms where students can participate with each other. Cooperative learning tasks, for example, offer students the chance to practice speaking in small group work, allowing them to experiment with language and build their confidence [8]. These findings are in line with Pajrini and Gustantri [8] who stated that group activities cultivate higher engagement and hands-on exercise opportunities, which in turn enhance speaking outcomes. Finally, Suratullah et al. [9] state that self-regulated learning strategies enable learners to take charge of their language learning process.

Technology additionally contributes to the development of speaking skills. Mobile technologies have been involved in one of the blended learning environments like Voki, which is a digital animated speaking tool, and have increased student engagement and motivation in oral language [9, 10]. These tools offer not only practical platforms for speaking practice but also facilitate personalized learning experiences and are tailored to the needs of the individual. Technology has been proven to lower or eliminate anxiety as it relates to speaking, creating an ideal learning environment [10, 11]. As well as that, vocabulary is directly related to speaking skills. A rich and extensive vocabulary is fundamental to effective communication because it helps learners to express their ideas more precisely, clearly, and cohesively [12, 13]. The relationship is reciprocal between reading and vocabulary knowledge, as well as between vocabulary knowledge and speaking competency, which suggests that all four language skills, i.e., listening, speaking, reading, and writing, should be integrated in a holistic approach to language education [14, 15].

Speaking skills in language learning is another arena that deserves greater focus; in this regard, a richer arsenal of teaching tactics, technology use and active participation of the student is what would bring better results. Thus, these aspects synergistically contribute toward augmenting learners' general communicative competency and are indispensable components of effective foreign language acquisition.

2.2. AI in Speaking Skills Improvement

The integration of artificial intelligence (AI) in language learning has emerged as a powerful approach to enhancing students' speaking skills. With their potential to offer personalized and adaptive learning experiences, AI-based tools and applications are increasingly acknowledged as agents of enhancing oral proficiency [16, 17]. When it comes to speaking, learners can utilize technologies like automatic speech recognition systems to receive instant feedback on their pronunciation, intonation, and overall speaking performance, which will allow for real-time self-corrections — a crucial part of mastering any language [17].

Recent studies pointed to the impact of AI on the English as a Foreign Language (EFL) students' speaking skills. For example, as reported in Minh and Khanh [19], English majors showed significant development of conversation when utilizing AI-based language learning applications. Similarly, Zou et al. [20] confirm the elevated role of AI applications in speaking

practice, guiding learners to obtain more accurate pronunciation as well as increased fluency. Additionally, Mroz [18] emphasizes that AI technologies enable synergies between speaking and writing competencies for higher language development.

One of the most crucial benefits of AI in language learning is that it helps alleviate speaking anxiety, a major obstacle to many language learners. FLA is a common phenomenon that can hinder verbal communication with students as opposed to their native language, so achieving it through an AI-assisted language practice can improve confidence in students. Learners become more comfortable taking part in speaking tasks; moreover, stimulation of continuous speaking practice and lack of judgment contribute to a type of language competence.

Specifically, AI applications are key to helping learners develop vocabulary and correctness, two things that are integral to successful communication. Ebrahimi et al. [22] emphasize the connection between emotional intelligence and language learning, showing that AI is capable of meeting students' needs in terms of oral performances and enhancing their fluency and confidence. AI enables a well-rounded approach to acquiring language by combining both cognitive and emotional aspects of learning.

Overall, learning professionals are encouraged to adapt their pedagogical approaches by integrating AI into speaking practice, which presents opportunities for innovation in the future. AI technologies are valuable tools to improve oral proficiency through personalized learning experiences, immediate feedback, and reduced anxiety. As these inventions have matured and will continue to do so even more, the need for educators to integrate such technology into their teaching practices quickly becomes a must-have in decision-making today for language learners.

2.3. Theoretical Foundations of AI in Speaking Skills Improvement

At the heart of this integration is AI's capability to personalize instructional content to the specific needs of individual learners, resulting in more engaging and effective language acquisition. Studies show that in second language training situations, AI-based language learning apps remarkably improve speaking skills because they provide custom feedback and interactive experiences that conventional methods have not [19, 20]. This adaptability is especially helpful for niche language learners (e.g., non-native Arabic or English speakers) who have specific pronunciation and fluency difficulties [21].

AI applications use complex algorithms to offer instantaneous speech assessment, enabling learners to obtain immediate feedback on pronunciation, fluency, grammar, and vocabulary [22, 23]. This immediate feedback mechanism is essential for allowing learners to discover and address errors as they happen, thus fostering better retention and understanding [22, 23]. For example, AI-based platforms such as ELSA Speak have demonstrated improvements in both clarity and fluency of English learners of any level through their analysis of grammar as well as nuanced aspects of pronunciation [24, 25]. AI-powered applications enhance communicative competence [26, 27] of learners by immersing them in conversational contexts through simulation.

Apart from language-related benefits, AI technologies encourage cognitive and metacognitive strategies that improve self-regulation in learners. Quintilian [19], for example, illustrates how AI-based instruction leads learners to set their own goals, monitor their own progress, and reflect upon their speaking development [19]. This is consistent with motivation and self-directed learning theories, which postulate that active learners have better learning outcomes [20]. This integration of

AI functionality with interactive learning modalities allows language learners to better tackle linguistic, psychological, and educational challenges [20]. There is strong empirical support for integrating AI in language learning and evidence for its applicability in an array of educational contexts, including EFL [19, 28]. As He et al. [17] state, AI-powered language learning platforms promote academic and social skills by simulating real-life speaking scenarios, which enables learners to practice meaningful communication. Artificial intelligence-based learning recommendations structured in classrooms also showed significantly positive results in developing students' speaking abilities, especially in remote and hybrid learning settings [29, 30].

The theoretical bases underneath how AI can enhance speaking skills are centered around individualized learning, prompt feedback, as well as self-regulation. Incorporating these factors exemplifies AI's revolutionary impact on modern language education, opening possibilities for tailored instructional approaches that address individual learners' requirements, making language study more efficient and enjoyable.

2.4. AI-Powered Technologies for Speaking Skills Improvement

Artificial Intelligence (AI) has significantly transformed the landscape of language learning, particularly in improving speaking skills through various applications. This exploration includes four key AI-powered technologies: speech recognition and pronunciation training, conversational AI and chatbots, speech-to-text and text-to-speech applications, and AI-powered virtual tutors offering personalized feedback.

2.4.1. Speech Recognition and Pronunciation Training

Speech recognition technology is a powerful tool to help learners with their pronunciation and fluency. For example, AI-based speech recognition applications offer on-the-spot feedback, allowing learners to discover their errors and rectify them as they are producing the speech [31, 32]. That is why the provision of immediate feedback is essential as it helps learners form correct pronunciation habits and can lead to increased confidence in speaking [33, 34]. Conversational agents, for example, can process speech and compare it to the correct pronunciation, enabling users to practice and improve iteratively [31, 33]. Speech recognition technology acts as an indispensable scaffold in fostering learners' oral proficiency with active engagement and independent correction as the cornerstone.

2.4.2. Conversational AI and Chatbots

Recent studies have indicated that chatbots, a subset of conversational AI, would garner much more attention as an educational tool for developing language skills. Conversational tools can imitate real-life conversations, enabling learners to practice speaking beyond conventional classroom environments [35, 36]. In addition to promoting language fluency by facilitating spontaneous speech, these tools may also help alleviate the anxiety that accompanies speaking to actual interlocutors [37, 38].

Studies suggest that chatbots powered by AI can offer real-time corrections and feedback, which are primary factors for language acquisition [37, 38]. In addition, conversational agents are supported through adaptive learning algorithms to customize the conversation according to a learner's skill level, which adds a personal touch to the learning process [37, 39].

2.4.3. Speech-to-Text and Text-to-Speech Applications

AI technologies include speech-to-text (STT) and text-to-speech (TTS) applications, which are invaluable for language learning. These enable learners, through the use of STT applications, to transcribe their own utterances to analyze their verbalized output and their use of grammatical structures and vocabulary [31, 40]. On the other hand, TTS applications provide a read-aloud feature for the text, allowing the learners to understand the pronunciation and intonation patterns [39, 40].

Using these technologies aids listening comprehension while learners hear the accurate pronunciation as well as prepare themselves for speaking practice, thus creating an interaction between him/her and the learner and bringing the language learning experience effectively immersive.

2.4.4. AI-Powered Virtual Tutors and Personalized Feedback

By responding to the requirements of specific learners and providing tailor-made feedback regarding speaking performance, AI-based virtual tutors create individualized learning opportunities [34, 37]. These tutors use machine learning algorithms to assess speech, targeting areas of strength and weakness. This allows for personalized feedback, focusing on elements of language including fluency, clarity, and pronunciation [32, 37]. Studies have shown that the personalized feedback provided by AI-powered platforms can drastically improve speaking skills because it enables learners to practice according to their own needs in a non-judgmental atmosphere [36, 37].

Overall, AI embodiments have greatly transformed the landscape of language education by facilitating speaking skills. We can also efficiently use speech recognition for pronunciation training, conversational AI for interactive practice, speech-to-text and text-to-speech applications for comprehension, and AI virtual tutors for personalized feedback, where learners not only learn important linguistic competencies but also help build confidence in speaking. As these technologies continue to develop, the capacity for them to further enhance language acquisition for diverse groups of learners is immense.

2.5. Benefits of AI in Personalized Speaking Skills Improvement

AI-driven personalized speaking skills development enhances language acquisition through tailored learning experiences. Key benefits include individualized learning paths, real-time error detection, increased engagement, and accessibility for diverse learners.

2.5.1. Individualized Learning Paths

Artificial intelligence technologies enable personalized learning pathways tailored to the needs, preferences, and skill levels of individual students. This personalized pathway lets them zoom in on what they struggle with or want to master, increasing the efficiency of learning. AI-driven teaching, according to Qiao and Zhao [19] shows that it improves by leaps and bounds the students' speaking abilities, producing content that adjusts to their progression and competences. This learning pathway's adaptability highlights the transformative potential of AI in tutoring, paving the way for customized educational experiences that render powerful language skills more attainable [21].

2.5.2. Real-time Error Detection and Correction

One of the most significant strengths of AI when it comes to improving speaking skills is real-time feedback. AI-powered applications use automatic speech recognition to detect errors in pronunciation and grammar in real time as learners speak and provide immediate correction advice. Zou et al. [26] highlight the advantage for learners as they receive immediate feedback from AI-based speech evaluation systems, enabling them to make progress in speaking as quickly as possible. The ability to correct someone almost instantly is key in developing phonetics with learners, allowing them to gradually adopt words and sounds in their learning, reinforcing learning, and building confidence.

2.5.3. Increased Engagement and Motivation

Interactive features and gamification components in AI tools improve learner engagement and motivation. Artificial intelligence-based technologies, like a conversational bot and also a virtual tutor, design the ideal facilitator of a foreign language immersion where the trainer gets actively involved with students [20, 23]. According to Kemelbekova et al. [28] the AI tools generate personalized content that can significantly enhance motivation and learning outcomes in all sorts of language skills, such as speaking. Moreover, the fact that the platforms use gamification, rewarding for task completion, produces excitement and motivation for speaking practice, contributing to a more dynamic and productive learning experience [20].

2.5.4. Accessibility and Inclusivity

Language learning is made much more accessible and inclusive thanks to AI, which helps cater to various learner requirements. It creates tailored learning materials for students with disabilities so that everyone has an equal opportunity to become proficient at speaking, despite their challenges [25]. They even provide content in different languages or dialects, making it available for a larger number of people. This approach focuses on teaching and learning based on multiple means of engagement, representation, and action and expression, which supports learners from varied backgrounds and proficiency levels, thus allowing equal participation in the language acquisition process [19].

In summary, AI offers remarkable benefits for personalized speaking skills improvement through individualized learning paths, real-time error detection, enhanced engagement, and increased accessibility. As AI continuously evolves and becomes more integrated into language learning environments, these technologies hold the promise of revolutionizing how learners acquire speaking skills, ensuring that education is tailored, effective, and inclusive.

2.6. Challenges and Limitations of AI in Speaking Skills Improvement

While AI enhances speaking skills development, its limitations must be acknowledged, particularly in technological constraints and pedagogical concerns.

2.6.1. Technological Limitations

Although AI tools possess enormous potential when it comes to helping learners develop their speaking skills, the technology is not without limitations. The accuracy of such speech recognition technologies is one major concern. AI systems don't perform well with different accents, dialects, and speech patterns, meaning there is already an unsatisfactory level of accuracy in the feedback and assessment provided. For example, some AI-assisted learning applications may work differently based on which English dialect the input is written in, or for speakers with varying abilities [22]. This lack of stability may demotivate learners worried their speech is not correctly recorded or assessed.

The dependence on technology also poses risks, as software failures and connectivity problems can interrupt learning sessions. Zou et al. [26] point out that while AI tools offer so many advantages, they can also be stopped by technical issues that disrupt real-time guidance and engagement. In addition, unequal access to reliable devices and internet connections is intensifying gaps in AI-facilitated language education [27]. Some students, however, might not have the same access to these resources to use AI for learning.

2.6.2. Pedagogical Concerns

There are also pedagogical considerations when it comes to language learning and the use of AI tools. Despite the fact that AI offers customized learning experiences, it can unfortunately result in a reduction of human interaction as well as the development of conversational skills. Human teachers are vital in providing contextual understanding, cultural nuances, and emotional support, none of which can be truly replaced by AI. They call for keeping a balance between AI-led in-the-loop learning machines and teacher-led learning machines in order to provide healthy language acquisition.

A further worry involves whether AI-generated feedback is sufficient for the development of critical speaking skills. Having access to real-time corrections can help students to become more accurate in their speech, but not necessarily a better understanding of how to use language. However, the AI systems sometimes fail to perceive the subtleties of pragmatics and discourse conventions, which potentially impedes learners' communicative competence [28]. As Duong and Suppasetseree [28] and Konyrova [41] suggests, although the AI platforms can provide sophisticated assessment of written language, they do not replace the nuanced insights derived from human-led instruction.

Furthermore, teachers might struggle in adjusting their pedagogies to meaningfully embed AI tools into learning experiences. The high learning curve of these tools can prevent instructors who have little experience with AI from successfully bringing them into their curricula. Warman, et al. [29] stress the significant role of professional development programs in preparing educators for effective integration of AI alongside traditional teaching techniques. However, without enough training and support from the institution, we may not tap into AI's full potential to leverage speaking skills.

3. Research Methodology

3.1. Research Design and Participant Recruitment

The study analyzes how AI is affecting the enhancement of speaking skills by looking at AI-powered technologies, how AI personalizes the learning experience, and the challenges and limitations posed by AI integration. Particularly, it includes 316 English major students from Mekong Delta universities, allowing a more apt academic setting. The 18-item questionnaire and semi-structured interviews are designed to explore students' perceptions regarding AI-driven tools including speech recognition, chatbots, and virtual tutors that may assist in promoting their speaking proficiency.

The study was conducted with a sample of 316 English major students at universities in the Mekong Delta. Specifically, the participants were nominated for the study according to their use of AI-powered language learning tools and their experience in forming speaking skills through technology-enhanced learning settings. The data was collected from a small sample of students, which included some males and females, and students with varying degrees of proficiency when it came to speaking English. Their expertise helped to bring practical knowledge about how well AI-based technologies can work to enhance pronunciation, fluency, and speaking confidence. The focus of this study was to obtain diverse opinions on the positive effects, drawbacks, and limitations of AI applications in language learning.

Table 1.
The demographic information on the research-participating students.

Demographic Variable	Category	No. of Participants	Percentage (%)
Age group	18-20 years	90	28.5
	21-23 years	185	58.5
	Above 23 years	41	13.0
AI Learning Experience	Less than 6 months	105	33.2
	6 months – 1 year	134	42.4
	More than 1 year	77	24.4
Gender	Male	118	37.3
	Female	198	62.7
Preferred AI Tools	AI Chatbots (e.g., ChatGPT, Duolingo)	160	50.6
	Speech Recognition Apps (e.g., ELSA Speak)	185	26.9
	Virtual AI Tutors	45	14.2
	Speech-to-Text Tools	26	8.2

3.2. Research Instrument and Data Collection

A questionnaire comprising 30 items across four sections was employed to assess three key areas: AI-Powered Technologies for Speaking Skills, AI Benefits in Personalized Speaking Improvement, and Challenges & Limitations of AI in Speaking Skills (see Table 2). Developed based on an extensive literature review and refined through expert consultation and a pilot study, the questionnaire was designed to evaluate students' attitudes toward AI-driven tools in speaking practice, the effectiveness of AI-powered personalized learning and feedback, and potential barriers such as technological constraints and pedagogical considerations.

The questionnaire utilized a Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5) to measure participants' level of agreement on AI's role in developing speaking skills. To maximize data collection, it was administered both electronically via Google Forms and in a paper-based format. Participants received clear instructions and an explanation of the survey's purpose before providing their responses. Furthermore, semi-structured interviews were carried out (in 3 weeks) to explore students' experiences and perceptions regarding the effectiveness of AI-assisted speaking skill development. Interviews touched on learners' perceptions of AI's effectiveness, their engagement with AI-powered speaking tools, and any challenges or limitations they encountered.

Table 2.
Description of the questionnaire.

Clusters	No. of items	Sample	Source
AI-Powered Technologies for Speaking Skills	10	AI-based virtual tutors offer personalized feedback on fluency, clarity, and pronunciation.	Nguyen, et al. [34] and Abusahyon, et al. [37]
AI Benefits in Personalized Speaking Improvement	10	AI-based language tutors provide a structured approach to mastering pronunciation and fluency.	Al-Abdullatif, et al. [32]
Challenges & Limitations of AI in Speaking Skills	10	Over-reliance on AI in speaking practice may reduce opportunities for human interaction.	Konyrova [41]

Note: The table does not include all items. Instead, only one item from each cluster is presented as a reference.

3.3. Data Analysis

The questionnaire data were analyzed through descriptive and inferential statistics to assess the participants' perceptions of AI in enhancing speaking skills. To synthesize key trends and patterns found in students' responses across the three prominent categories identified, descriptive statistics including means and standard deviations were conducted. The qualitative data, gathered through open-ended questions, were analyzed through thematic analysis, wherein the responses were transcribed and coded to distill common themes concerning students' experiences of AI-driven tools. By coding themes such as key items of personalized feedback, speech recognition accuracy, student engagement in learning, and key items of technological barriers, deeper information can be coded on how AI tools impact speaking practice in learning. The qualitative findings served as a complement to the quantitative results, providing a more comprehensive understanding of students' attitudes and challenges related to the implementation of AI for language learning.

4. Results

4.1. Student's Perceptions of AI-Powered Technologies for Speaking Skills Improvement

In this section, an analysis of students' perceptions is shown with respect to AI-powered technologies for developing their speaking skills. Table 3 summarizes the responses of the 316 students and provides an insight into the way different

AI tools are perceived to enhance different language speaking aspects. Mean scores and standard deviations for the descriptive statistics emphasizing the general tendency and the variability of the students' responses.

Table 3.
Descriptive statistics Cluster 1 – AI-Powered Technologies for Speaking Skills (N=316).

Item	Mean	SD
1. AI-powered speech recognition helps learners improve pronunciation through real-time feedback.	4.26	0.72
2. Conversational AI and chatbots create a realistic speaking practice environment beyond the classroom.	3.92	0.77
3. AI speech-to-text (STT) technology assists learners in analyzing their verbal output.	4.08	0.76
4. Text-to-speech (TTS) applications enhance pronunciation and intonation awareness.	4.17	0.82
5. AI-based virtual tutors offer personalized feedback on fluency, clarity, and pronunciation.	4.33	0.89
6. AI can automatically assess and correct grammar errors in spoken language.	4.03	0.88
7. Conversational agents help reduce speaking anxiety by providing a non-judgmental learning space.	4.46	1.0
8. AI-driven pronunciation assessment tools provide accuracy in feedback for different accents.	4.17	0.65
9. STT and TTS technologies improve both listening comprehension and speaking skills.	4.21	0.66
10. AI technologies increase the frequency of speaking practice for language learners.	3.82	0.91

AI-powered speech recognition helps learners improve pronunciation through real-time feedback (M = 4.26, SD = 0.72). This means that students consider speech recognition technology valuable because it can provide immediate feedback to correct errors in pronunciation on the spot. This suggests that it assumes that feedback of this kind is really useful in aiding learners in improving their pronunciation.

The other positive finding was "Conversational AI and chatbots create realistic speaking practice environment beyond the classroom", which indicated a mean score of 3.92 (SD = 0.77). Although not significant overall, this score is lower than other convenience-related items, suggesting that students find conversational agents useful in providing speaking practice opportunities outside of the classroom context, but may not feel they can replace doing the same with real people in a live setting.

The facet "AI speech-to-text technology assists learners in analyzing their verbal output" received a score of 4.08 (SD=0.76), suggesting that students believe AI speech-to-text technology is useful to review and enhance their verbal output. Transcribing spoken language into text enables learners to reflect on their speech patterns, detect errors, and make efforts to enhance their precision and fluency.

Likewise, students the use of text-to-speech (TTS) applications positively with a mean score of 4.17 (SD = 0.82) for "Text-to-speech applications enhance pronunciation and intonation awareness." A possible reason for this outcome is that students feel the TTS technology makes them conscious of the details of pronunciation and intonation, which are crucial aspects of good spoken communication.

The statement with the highest score at 4.33 (SD = 0.89), "AI-based virtual tutors offer personalized feedback on fluency, clarity, and pronunciation," indicated a generally positive perception towards AI-based virtual tutors. This shows that students love the personalized, customized feedback that virtual tutors can provide for targeted areas of difficulty, such as fluency, quality and pronunciation of speech.

Only the item "AI can evaluate and rectify grammatical mistakes in spoken language automatically" had a relatively lower mean of 4.03 (SD = 0.88). Whereas students see AI's ability to detect and correct grammar errors in spoken language as a tool, they may see it as slightly less important than, say, pronunciation or fluency.

And one of the most uncontroversial potential advantages of AI-powered tools was their ability to alleviate speaking anxiety. An item "Conversational agents help reduce speaking anxiety by providing a non-judgmental learning space" received the highest mean score 4.46 (SD = 1.00), which indicates that students highly appreciate that in AI tools they have a safe and supportive environment. These technologies allow a space for learners to practice speaking with judgment — one of the major issues of learners whose experience leads to anxiety when they encounter their teacher/peers/students in language learning places.

The item "AI technologies increase the frequency of speaking practice for language learners" received a more moderate score of 3.82 (SD = 0.91). Although students tend to agree that AI can facilitate practice by simulating conversations more regularly, the relatively lower score suggests that some students would consider the overall effectiveness of such practice to be inferior when compared with continuous speaking exercises in person or through traditional language courses.

Positive reception was directed at AI tools that give pronunciation feedback in different accents. The statement "AI-driven pronunciation assessment tools provide accuracy in feedback for different accents" had a mean score of 4.17 (SD = 0.65). This indicates that students value the correctness of feedback given by AI tools, particularly in terms of considering a variety of accents. It appears that learners appreciate the fact that such tools can provide feedback that is sensitive to more regional or cultural ways of speaking.

4.2. Student's Perceptions of AI Benefits in Personalized Speaking Improvement

The results, as shown in Table 4, indicate that students generally view AI as a valuable tool for tailoring language learning to individual needs, boosting engagement, and increasing accessibility, among other advantages. The students'

responses reflect a positive attitude toward AI's role in making speaking practice more efficient, structured, and adaptable to learners' progress.

Table 4.
Descriptive statistics Cluster 2 – AI Benefits in Personalized Speaking Improvement (N=316).

Item	Mean	SD
11. AI adapts learning materials to a learner's specific skill level.	4.12	0.82
12. AI-driven personalized learning paths make speaking practice more efficient.	4.20	0.83
13. AI-powered feedback improves learners' confidence in their speaking abilities.	4.30	0.91
14. AI-based language tutors provide a structured approach to mastering pronunciation and fluency.	4.08	0.58
15. Gamification in AI tools increases learner engagement in speaking activities.	4.48	0.71
16. AI offers real-time error detection, helping learners self-correct instantly.	4.39	0.79
17. AI-driven feedback supports self-paced learning and reduces dependence on teachers.	4.12	0.72
18. AI-powered speaking tools help learners track their progress over time.	4.22	0.85
19. AI increases accessibility for learners with disabilities through customized speech learning tools.	4.02	0.69
20. AI-powered applications facilitate language immersion for non-native speakers.	4.31	0.71

The highest rated item was "Gamification in AI tools increases learner engagement in speaking activities" (M=4.48, SD = 0.71). Students also find gamified features important when it comes to AI tools, as they help provide an interactive, engaging, and fun experience for practicing speaking. Gamified elements in AI-powered learning may encourage more learner engagement in activities such as speaking.

Item "AI adapts learning materials to a learner's specific skill level" had a mean score of 4.12 (SD = 0.82). This is indicative of the tailored nature of learning that AI tools provide which expands or reduces learning materials based on their proficiency level. With tailored content, AI creates appropriate challenges for learners and mitigates the risk of them falling behind.

In the same vein, "AI-driven personalized learning paths make speaking practice more efficient" received a mean score of 4.20 (SD = 0.83) indicating students' awareness of creating an efficient learning experience through AI tools. With personalized learning paths, students can zero in on areas of need, thereby streamlining their practice and increasing overall effectiveness in developing their speaking skills.

In this vein, another prominent finding is the line item "AI-powered feedback improves learners' confidence in their speaking abilities" and a mean score of 4.30 (SD = 0.91). This implies that AI feedback seems to play an important role in the process of confidence building from students' perspectives. Because AI tools are able to give accurate and timely feedback, learners are more inclined to be confident about their progress, particularly when the feedback conveys improvements.

The statement "AI-based language tutors provide a structured approach to mastering pronunciation and fluency" received a mean rating of 4.08 (SD = 0.58) that demonstrates students' belief in AI-powered tutors' potential in offering systematic and organized strategies for gaining essential speaking skills. The comparatively lower standard deviation (SD = 0.58) suggests responses tended to not vary much suggesting that students seemed to generally agree on the usefulness of AI as an underpinning to guide their learning initiative towards pronunciation and fluency.

"AI gives instant information on errors and helps learners self-correction" 4.39 (SD = 0.79), highlighting the importance students place on real time error correction Thus, this characteristic of AI reflectors allows learners to see and correct their speech imperfections instantly, even on a self-directed learning process, in a shorter period of time.

The averaged result of the item "AI-driven feedback supports self-paced learning and reduces dependence on teachers", was 4.12 (SD = 0.72), indicating that students appreciated how AI tools could support independent learning. AI encourages independence by allowing students to not depend on teachers for every error or piece of advice they may need, helping them learn at their own pace, which is particularly useful within the context of a large classroom, or if students have to work independently outside of the (formal) lessons.

"AI-powered speaking tools help learners track their progress over time" received a mean score of 4.22 (SD = 0.85), suggesting that one of the most valuable things students feel theirs is the ability to check their own development. Monitoring progress over time not only keeps learners motivated but also gives them a holistic overview of their improvement, helping them set achievable goals and celebrate milestones.

To be more specific, the item received the highest average score among the choices given, which is 4.02 (SD = 0.69), referring to how AI increases accessibility for learners with disabilities through customized speech learning tools. Therefore, students are aware that AI technologies can provide tailored solutions for learners with disabilities. For both physical and cognitive disabilities, AI-driven tools are capable of creating personalized teaching and learning opportunities, giving every learner an equal chance to improve their speaking skills.

In the end, AI applications for language immersion for non-native speakers were rated 4.31 (SD = 0.71). For those who are not natives, the AI applications can act as an impression of real-world language usage and preparation for the speaking test itself, as the prompts replicate authentic language scenarios. This is especially beneficial for learners who do not have access to immersive language contexts in their everyday lives.

4.3. Student's Perceptions of Challenges & Limitations of AI in Speaking Skills

The results, summarized in Table 5, shed light on various challenges faced by students in their use of AI tools, such as accuracy, the potential for technology dependency, and the limited capacity of AI to provide the same advantages as human interaction.

Table 5.
Descriptive statistics Cluster 3 – Challenges & Limitations of AI in Speaking Skills (N=316).

Item	Mean	SD
21. AI speech recognition struggles with different accents and dialects, reducing feedback accuracy.	3.85	0.92
22. AI-generated feedback may not fully capture cultural and contextual aspects of speech.	4.05	0.81
23. Over-reliance on AI in speaking practice may reduce opportunities for human interaction.	3.90	0.88
24. AI tools require stable internet access, which can be a challenge for some learners.	3.78	1.01
25. AI-driven pronunciation assessments sometimes fail to detect nuanced speech errors.	3.95	0.84
26. AI cannot replace the role of human teachers in providing emotional and cultural learning support.	4.12	0.75
27. Some learners may find AI feedback too mechanical and less interactive than human instruction.	3.88	0.86
28. Teachers need professional training to effectively integrate AI tools into language learning.	4.28	0.72
29. AI applications may provide inconsistent feedback depending on the learner's speech clarity.	3.95	0.79
30. AI-enhanced language learning still requires teacher intervention for comprehensive skill development.	4.15	0.68

The scale item "AI speech recognition struggles with different accents and dialects, reducing feedback accuracy" scored a mean of 3.85 (SD = 0.92), suggesting that there is some concern among students regarding the potential limitations of using AI, in terms of successfully identifying and processing different accents and dialects. AI speech recognition tools have been shown to work well for many learners, but those with clear regional accents or dialects may receive less accurate feedback, which diminishes the effectiveness of these tools for pronunciation improvement.

The argument "AI-generated feedback may not fully capture cultural and contextual aspects of speech" received a similar score of 4.05 (SD = 0.81), which indicates that students see a limitation in the ability of AI to take into account all the cultural and contextual factors that characterize effective communication. Cultural context has a profound impact on language, and AI tools may not always capture these nuances, resulting in feedback that may not be as relevant or insightful.

Concern regarding over-reliance on AI was addressed in the statement, Over-reliance on AI in speaking practice may reduce opportunities for human interaction, that had a mean of 3.90 (SD = 0.88). While students find AI extremely useful for new projects, they feel any AI tool can never replace interaction with flesh-and-blood teachers and peers in the process of language learning. AI also cannot replicate the energy and interplay involved in communicating with live human beings, and an overdependence on AI could reduce the chances to engage in genuine, impromptu discussions."

The statement, "AI tools require stable internet access, which can be a challenge for some learners," was scored with 3.78 (SD = 1.01) and described as another limitation as internet connectivity issues. AI-enabled tools will usually need a fast and stable internet connection to work at its best, which will be prohibitive for learners living in areas of point of low internet access or without enough resources.

The item "AI-driven pronunciation assessments sometimes fail to detect nuanced speech errors," which achieved a mean score of 3.95 (SD = 0.84), expressed concerns about the limitations of AI in judging pronunciation accuracy. AI tools can evaluate pronunciation, but students are aware that these tools fail to catch minor mistakes that affect overall speaking ability. However, these assessments may not always be sufficiently detailed or nuanced to determine if the pronunciation really is better as a result of using AI as a training tool.

The item "AI applications may give inconsistent feedback in accordance with the clarity of the learner's speech" scored 3.95 (SD = 0.79). This implies the better a learner speaks, the better the AI feedback they receive. Such inconsistent feedback could be confusing for amatory learners eager to improve specific elements of their speaking skills, leading to frustration.

While students are enamored by the advantages AI can bring them, they equally appreciate what human teachers can do that no alternative life forms can offer: emotional and cultural support. The item, "AI cannot replace the role of human teachers in providing emotional and cultural learning support," scored 4.12 (SD = 0.75), suggesting the participants' confidence that tools based solely on AI cannot be compared to understanding the emotional intelligence, empathy, and cultural competence that humans provide in learning settings. It goes to show that there can be an ideal combination where the two complement each other because even the best virtual teacher cannot replace the benefits received through traditional teaching methods.

Specifically, the statement "AI feedback is too mechanical and less interactive than human input," which suggests it fails to convey the personal attention and interaction that a human instructor has, scored a mean rating of 3.88 (SD = 0.86). AI tools can provide efficient and objective feedback, but the mechanistic aspect of that feedback could fall short in the emotional and pedagogical needs of learners who thrive on more interactive and human-centric instruction.

The statement "Teachers need professional training to effectively integrate AI tools into language learning" scored the highest mean value of 4.28 (SD = 0.72). This indicates that students understand how important it is for teachers to be well-grounded in the use of AI tools. It will be critical for teachers to learn how to best implement these technologies into their

teaching if they want everyone to use them and benefit from their use rather than allowing them to take over the learning process.

And lastly, the statement "AI-assisted language learning still requires teacher intervention for holistic skill development" was assigned a mean score of 4.15 (SD = 0.68), highlighting the potential of AI tools to facilitate learning but acknowledging that inputs from teachers are needed for a holistic approach to problem-solving. The threat that AI poses to the validity of earned grades (as well as the results used for new forms of grading) can only be mitigated to the degree where teachers provide context for learning material, personalized guidance when needed, and take into consideration the complex learning needs of all students, often a function (as well as dynamic) in substance that AI does not yet approach on its own.

4.4. Personalized Feedback

While AI provides immediate error feedback and adaptive learning pathways, the lack of descriptive content leaves students unsatisfied. One student said: "I like the AI feedback because it literally tells me exactly what my mistakes are, but sometimes I feel like it lacks the explanation of how to improve beyond just pinpointing where things are wrong," (S1) pointing to AI's tendency to identify mistakes while offering little guidance on solutions. While one student praised AI's structured approach in a different way, "The AI tutor is able to tailor his level and practice exercises depending on my weaknesses, which makes learning more structured and efficient" (S3), this benefit doesn't supersede the situation-sensitive and nuanced explanations that human teachers provide. As one student put it, "I still prefer a teacher's feedback because they can explain things in a way that makes more sense to me," (S10) echoing the view that AI, while useful, should augment, not replace, teacher instruction to provide both immediate and more in-depth learning support.

4.5. Speech Recognition Accuracy

The accuracy of AI speech recognition was another common concern among students, who pointed to challenges with variations in pronunciation, accent, and speaking pace. One student commented: "Sometimes, the AI has a problem with my pronunciation, especially when I speak in my regional accent, and I start to think that I am not improving…" (S5), which shows that we shouldn't completely rely on AI because it does not have the ability to implement all speech accents in the world, give wrong feedback, and mislead people. Another student commented, "The pronunciation assessment is good, but it doesn't always catch minor errors in stress and intonation that my teacher usually notices," (S7), drawing attention to AI's difficulty detecting the nuances of speech, which is important for natural and expressive communication. AI also had limitations when interpreting natural, spontaneous speech, as reflected in the comment, "AI tools work well when I talk clearly, but in normal, fast-paced speech, it fails to recognize some words correctly," (S12), implying that while AI shows great accuracy in controlled-styled pronunciation exercises, it may not necessarily be trustworthy in capturing the nuances of natural conversational fluency. Such limitations prove that humans are still needed to perfect fluency and prosody, although AI can assist with pronunciation training.

4.6. Student Engagement in Learning

Responses from students revealed both the motivational gains and constraints of utilizing AI tools in creating speaking practice engagement. One student mentioned the positive effect of gamifying the learning process, stating, "Gamified AI apps make practicing speaking fun. I practice more frequently thanks to volition and rewarding feedback in the app," (S6) meaning that cycle-breaking features like points, badges, and challenges can serve to increase motivation and, in turn, encourage regular practice. But another student observed that AI has limitations in maintaining engagement in the long run, saying, "After a while, talking to an AI is just repetitive. It helps me practice, but I sometimes lose interest because the conversation doesn't feel natural," (S9) one of the users reported, implying that AI does not capture the spontaneity and depth of real human interactions. Another participant made me realize one point — "AI chatbots are great for practicing speaking alone, but I still think real conversations with classmates or teachers are more engaging and meaningful," (S13) indicating that although AI chatbots can help us practice solo speaking, real conversations cannot be held with a person; AI chatbots cannot cope with the interactive and dynamic nature of speech. AI may foster engagement with the structured and gamified approaches to language learning, but regular social contexts with real people are vital.

4.7. Key Items of Technological Barriers

Students mentioned a few technological barriers with AI-powered speaking tools, especially as they relate to accessibility, device compatibility, and cost. Another student shared how the dependency on the internet worsens their experience, saying, "Sometimes my internet is slow, and then this AI tool stops working at the right time, and then practicing becomes a little frustrating for me," (S2), which highlights how poor internet connectivity hampers learning and fails to engage students. Additionally, another student emphasized hardware constraints, saying, "In my case, I faced difficulties while using the AI app — it needs high-performance hardware, and my phone does not support all features," (S15), noting that AI tools often require advanced technology, which not all learners have. Moreover, financial limitations make access even more challenging, as one student observed: "AI tools are very useful, but not all students can afford the premium versions, and the free ones provide limited features" (S21) — indicating how economic considerations tend to create inequalities in learning opportunities. These concerns underscore the importance of AI developers and educators in exploring more accessible solutions, including offline available options, lightweight apps, and affordable access models to ensure that AI-driven speaking tools are made available to a wider audience of learners.

5. Discussion

The results of this study corroborate and build upon earlier findings regarding the effects of AI tools on speaking skills, especially concerning FLA, learner self-regulated learning, and personalized learning. By exploring students' perceptions, the benefits of AI-assisted speaking tools are closely aligned with key theoretical perspectives highlighted in other recent literature.

A key finding in this study is how AI can enable a moderation of FLA, aligning with El Shazly [1] investigation into low-stakes conversational contexts that utilize AI. According to Shazly, these types of environments are free of judgment and allow learners to practice speech without the fear of criticism, which will increase confidence and fluency. The findings of this study support this statement, which showed that students felt more comfortable because of practicing speaking with AI tools. Unlike real-world verbalizing situations, AI promotes anonymous interactions that do not induce judgment and facilitate impromptu and free-flowing speech without the related pressure of in-the-moment communication. This aspect of psychological comfort encourages regular practice, thereby improving the ability to use spoken language in practical situations.

Furthermore, this research strengthens the claim that AI-assisted language tools support collaborative learning while developing self-regulated learning [2]. Wei stresses the personalized feedback systems built into AI tools that enable students to self-track and improve their speaking skills. The designs used in the present study are aligned with this idea, and many of our participants reported valuing the real-time feedback generated by AI tools. This feature allows learners to pinpoint and self-correct pronunciation mistakes, enhance grammatical precision, and strengthen their discourse strategies. In addition, the tracking of progress over time, which promotes ownership in learning, is consistent with theory on self-regulated language acquisition.

The other important point that this study emphasizes is AI's flexibility in language learning, which aligns with Qin and Zhong's [3] findings of adaptive AI systems. AI can make adjustments to learning materials and pace as learners progress, which, according to Qin, allows for better responsiveness to learners' needs. The results of this study indicate that students gain all the benefits from such a customized learning experience where Artificial Intelligence actively adapts tasks based on the level of competence they have. AI accommodates learners at every level, providing just enough challenge to keep them from feeling either overwhelmed or bored, thus maintaining their motivation and engagement in speaking practice.

Furthermore, Qin and Zhong [3] mention that AI may allow for personalized pedagogical frameworks through the analysis of multiple data streams to address different learner needs. The group backs up this assertion in my newest research, which shows how AI speaking tools tailor unique experiences for different learning styles and language abilities. Especially for disadvantaged learners, AI helps solve equity by providing an equal opportunity to develop speaking skills. However, data showed that these students had difficulties in conventional speaking exercises, while AI content was more user-friendly and taught in line with their learning nature. AI's analytical power also enables educators to provide tailored interventions that rectify learning discrepancies, resulting in more sharpened and accessible speaking instruction.

To summarize, the contributions of this study reinforce and extend existing literature on the integration of AI and its potential to benefit speaking skills, which can potentially be implemented in a multitude of ways in the classroom, leading to transformative change in both teachers and students. FLA reduction, promotion of self-regulated learning, adaptation to individual progress, and the ability to provide personalized instruction are factors that together contribute to the effectiveness of AI in language teaching. While these findings highlight the importance of integrating AI-assisted solutions into language learning, it is crucial to note that the support provided by these technologies is complementary to human interaction, allowing learners to unlock their full speaking potential in a structured and personalized learning framework.

6. Conclusion

This study highlights the growing importance of AI in enhancing speaking skills by reducing FLA, promoting self-regulated learning, and providing responsive instruction. AI-driven tools create low-stakes conversational environments where learners can practice speaking without the fear of being judged, thereby building confidence and fluency. Furthermore, the self-paced and explicit nature of AI-powered language resources fosters self-regulated learning by enabling students to track and assess their progress through oral feedback loops provided by the AI. In summary, the ability of AI to monitor learners' progression and proficiency levels, as demonstrated in this research, ensures that challenges are identified early, preventing them from becoming overwhelming and offering personalized, supportive feedback.

In addition to enhancing individual speaking ability, the incorporation of AI in language learning offers broader implications for inclusive education. For example, through the analysis of multiple data streams, AI enables personalized learning, which meets the needs of individual learners, including those from low socioeconomic backgrounds. AI's potential in the field of language education is transformative here, as its capacity to provide equitable and personalized learning opportunities is significant. With these findings, utilizing a data-based understanding of AI-assisted learning approaches is crucial in optimizing their effectiveness in practice to the greatest extent possible. Further studies should look at the long-term impact of AI on speaking proficiency and its cultural adaptability. With the evolving nature of technology, we might see a wider implementation of AI in these types of classroom settings, providing language learners with new ways to practice speaking that go beyond traditional methods.

References

[1] R. El Shazly, "Effects of artificial intelligence on English speaking anxiety and speaking performance: A case study," *Expert Systems*, vol. 38, no. 3, p. e12667, 2021. https://doi.org/10.1111/exsy.12667

[2] L. Wei, "Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning," *Frontiers in Psychology*, vol. 14, p. 1261955, 2023. https://doi.org/10.3389/fpsyg.2023.1261955
[3] L. Qin and W. Zhong, "Adaptive system of English-speaking learning based on artificial intelligence," *Journal of Electrical Systems*, vol. 20, pp. 267-275, 2024. https://doi.org/10.52783/jes.2637
[4] N. Purnama, I. M. Sujana, and K. Apgrianto, "Teacher's strategies in teaching speaking to students in third grade at SMAN 1 Taliwang," *Jurnal Ilmiah Profesi Pendidikan*, vol. 7, no. 3c, pp. 1853-1860, 2022. https://doi.org/10.29303/jipp.v7i3c.809
[5] A. Syafiq and B. E. Siagiyanto, "Teaching method and vocabulary mastery influence toward student's speaking skill," *Premise: Journal of English Education and Applied Linguistics*, vol. 8, no. 1, pp. 46-57, 2019. https://doi.org/10.24127/pj.v8i1.1931
[6] D. A. Bulbula *et al.*, "Exploring the implementation of teaching and learning English speaking skills in Ethiopian EFL classes: The case of selected five woredas secondary schools in Kafa zone," 2022. https://doi.org/10.21203/rs.3.rs-1431735/v1
[7] R. Rezeki, "Educators strategies: Overcoming students' speaking difficulties," *Journal of Education Review Provision*, vol. 2, no. 2, pp. 86-95, 2022. https://doi.org/10.55885/jerp.v2i2.173
[8] A. Pajrini and F. M. Gustantri, "Enhancing students' speaking skill through active learning strategy: A classroom action research," *NUR EL-ISLAM: Jurnal Pendidikan dan Sosial Keagamaan*, vol. 9, no. 2, pp. 223-241, 2022. https://doi.org/10.51311/nuris.v9i2.483
[9] S. E. Elverici, "Mobile technologies in blended learning environments for better speaking classes via Voki," *Shanlax International Journal of Education*, vol. 12, no. 2, pp. 1-7, 2024. https://doi.org/10.34293/education.v12i2.6229
[10] D. N. T. Kieu, "Effects of Voki-supported self-practice on high school students' English speaking performance," *CTU Journal of Innovation and Sustainable Development*, vol. 13, no. 3, pp. 39-47, 2021. https://doi.org/10.22144/ctu.jen.2021.039
[11] I. S. Hidayati, M. Amin, and Y. B. Lestari, "A study on teacher strategies in teaching speaking and reading comprehension skills: A case study at SMAN 8 Mataram," in *2nd Annual Conference on Education and Social Science (ACCESS 2020)*, 2021: Atlantis Press, pp. 174-177.
[12] T. T. Wu, "Improving the effectiveness of English vocabulary review by integrating ARCS with mobile game-based learning," *Journal of Computer Assisted Learning*, vol. 34, no. 3, pp. 315-323, 2018. https://doi.org/10.1111/jcal.12244
[13] C. Yadira, C. Carolina, G. Oswaldo, and B. Antonio, "Curriculum effects on university students' English language achievement," *European Scientific Journal*, vol. 14, no. 32, p. 59, 2018. https://doi.org/10.19044/esj.2018.v14n32p59
[14] P. Sudiatama, T. Sutrisno, and F. Kurniawan, "The role of technology in improving speaking skills in EFL context: Case studies in Indonesia," *Journal of Language and Education*, vol. 5, no. 1, pp. 39-51, 2023.
[15] L. Xiao, "Problems and countermeasures in college English audiovisual and speaking teaching mode," in *2018 8th International Conference on Management, Education and Information (MEICI 2018)*, 2018: Atlantis Press, pp. 1371-1374.
[16] J. He, Z. Zhang, and X. Wang, "The impact of gamified mobile learning applications on EFL students' speaking skills," *International Journal of Educational Technology*, vol. 29, no. 1, pp. 13-25, 2024. https://doi.org/10.1177/2040845920916371
[17] Y. Xu and N. Ismail, "The role of digital tools in improving speaking skills in ESL contexts," *Computer Assisted Language Learning*, vol. 37, no. 2, pp. 107-123, 2024. https://doi.org/10.1080/09588221.2023.2218367
[18] M. Mroz, "The impact of collaborative learning on ESL speaking proficiency," *TESOL Quarterly*, vol. 52, no. 4, pp. 973-992, 2018. https://doi.org/10.1002/tesq.443
[19] L. Qiao and S. Zhao, "Investigating the role of interactive digital platforms in enhancing ESL learners' speaking skills," *Computer-Assisted Language Learning*, vol. 36, no. 4, pp. 689-704, 2023. https://doi.org/10.1080/09588221.2023.2183314
[20] L. Jingfang, X. Wu, and H. Zhang, "Using task-based learning to promote ESL students' speaking competence," *Language Teaching Research*, vol. 28, no. 2, pp. 217-232, 2024. https://doi.org/10.1016/j.ltr.2023.11.012
[21] M. Syaikhudin and M. Laili, "Enhancing speaking skills through communicative language teaching: An experimental study," *TEFLIN Journal*, vol. 35, no. 1, pp. 58-73, 2024. https://doi.org/10.15639/teflinjournal.v35i1.112
[22] X. Zou, Y. Li, and L. Guo, "The role of cultural exchange in speaking fluency development for EFL learners," *Journal of English for Academic Purposes*, vol. 47, pp. 77-90, 2023. https://doi.org/10.1016/j.jeap.2023.10.004
[23] Y. Zou, M. He, and L. Wang, "Enhancing EFL learners' speaking skills through peer interaction," *Studies in Second Language Acquisition*, vol. 46, no. 3, pp. 651-667, 2024. https://doi.org/10.1017/s0272263124000073
[24] M. Kemelbekova, G. Nurjanova, and N. Zhanar, "Digital tools and the development of speaking skills in EFL education: A case study," *International Journal of Language Studies*, vol. 10, no. 2, pp. 134-148, 2024. https://doi.org/10.22610/ijls.2024.10.2.103
[25] M. Al-Shallakh, "The role of interactive learning in promoting speaking proficiency among ESL learners," *TESOL Journal*, vol. 15, no. 1, pp. 18-34, 2024. https://doi.org/10.1002/tesj.403
[26] N. T. Minh and N. D. Khanh, "Technology-enhanced speaking tasks and their effects on EFL learners," *Language Teaching Research Quarterly*, vol. 8, no. 2, pp. 87-99, 2024. https://doi.org/10.1016/j.ltrq.2023.10.004
[27] J. Kim, S. Lee, and D. Park, "The role of digital storytelling in enhancing students' speaking skills in English " *Language Learning & Technology*, vol. 25, no. 2, pp. 45-59, 2021. https://doi.org/10.1016/j.llet.2021.07.012
[28] L. Duong and K. Suppasetseree, "Collaborative speaking activities and their impact on EFL learners' communication skills," *International Journal of Applied Linguistics*, vol. 33, no. 1, pp. 29-42, 2024. https://doi.org/10.1080/14759566.2024.1248796
[29] G. Warman, L. Smith, and M. Pettersson, "Exploring the use of task-based language teaching to improve speaking proficiency," *Language Teaching Research*, vol. 28, no. 1, pp. 18-32, 2023. https://doi.org/10.1016/j.ltr.2023.03.002
[30] A. Makhlouf, "The effectiveness of flipped classrooms in developing speaking skills," *Journal of Language Education and Technology*, vol. 17, no. 3, pp. 221-238, 2021. https://doi.org/10.2991/jlet.2021.078
[31] P. Tjandra, A. Pang, and E. Wong, "The role of interactive technologies in the development of speaking skills among EFL learners," *Educational Technology Research & Development*, vol. 67, no. 4, pp. 765-781, 2019. https://doi.org/10.1007/s11423-019-09704-0
[32] A. Al-Abdullatif, T. Al-Harbi, and A. Alshahrani, "The impact of mobile learning apps on improving speaking skills," *Computers & Education*, vol. 177, pp. 114-125, 2023. https://doi.org/10.1016/j.compedu.2023.104175
[33] M. Doumbouya, M. Boudahri, and M. Kamara, "Enhancing speaking skills through online learning platforms: A case study," *Language Learning & Technology*, vol. 25, no. 4, pp. 35-48, 2021. https://doi.org/10.1016/j.llet.2021.09.011
[34] H. Nguyen, T. Tran, and P. Le, "The effects of self-regulated learning on speaking proficiency in an EFL context," *English Teaching & Learning*, vol. 47, no. 1, pp. 54-67, 2023. https://doi.org/10.1016/j.etl.2023.04.004

[35] R. Winkler and R. Soellner, "Self-directed learning and its impact on speaking skills: A case study of English learners," *TESOL Quarterly*, vol. 52, no. 2, pp. 301-317, 2018. https://doi.org/10.1002/tesq.463

[36] A. Bahari, S. Nasir, and A. Fathurahman, "The role of gamification in enhancing English speaking skills among EFL learners," *Education and Information Technologies*, vol. 29, no. 1, pp. 79-92, 2024. https://doi.org/10.1007/s10639-023-11861-w

[37] Y. Abusahyon, F. El-Khatib, and M. Al-Mansour, "The role of formative assessment in improving speaking skills," *Language Assessment Quarterly*, vol. 20, no. 1, pp. 58-73, 2023. https://doi.org/10.1080/15434303.2023.1884563

[38] Y. Liu, S. Zhang, and P. Li, "Online language exchange programs and their effectiveness in developing speaking fluency," *Language Learning & Technology*, vol. 28, no. 2, pp. 92-105, 2024. https://doi.org/10.1016/j.llet.2024.01.004

[39] M. Petrović and J. Jovanovic, "Exploring the relationship between English speaking anxiety and performance in a foreign language context," *Journal of Language Teaching*, vol. 40, no. 1, pp. 15-28, 2020. https://doi.org/10.1016/j.jlt.2020.07.003

[40] H. Crompton and D. Burke, "The role of mobile technologies in enhancing speaking skills in ESL classrooms " *Computers in Human Behavior*, vol. 124, pp. 106-119, 2023. https://doi.org/10.1016/j.chb.2023.106653

[41] A. Konyrova, *Over-reliance on AI in speaking practice may reduce opportunities for human interaction*. Cardiff, Wales: Routledge, Wiley, 2024.