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# EXPLORING THE EFFECT AND LEARNERS' EXPERIENCES OF HUMAN-AI COLLABORATIVE SPEAKING PRACTICE AMONG INDONESIAN EFL LEARNERS

**Devina Indah Puspa Rini[1], Nirwanto Maruf[2]***
*[1,2]Master's Program in English Education, Universitas Muhammadiyah Gresik, Gresik, East Java, Indonesia.*

**Corresponding author's email:** nirwanto.maruf@umg.ac.id

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**Abstract:** Speaking remains a crucial yet challenging skill for Indonesian EFL learners, particularly because limited classroom time, speaking anxiety, and insufficient authentic interaction often restrict learners' opportunities to develop fluency and confidence. Although AI-based speaking tools have increasingly been used in language learning, previous studies have emphasized individual AI-mediated practice and measurable proficiency outcomes, while limited attention has been given to human–AI collaborative speaking practice and learners' experiences in the Indonesian EFL context. This study investigated the effect of human–AI collaborative speaking practice using SmallTalk2Me on learners' speaking skills and anxiety, while also exploring learners' perceived benefits, challenges, and views of AI and human interaction. A sequential explanatory mixed-methods design was employed with 20 intermediates Indonesian EFL learners. Quantitative data were collected through IELTS-based speaking pre-tests and post-tests and a Foreign Language Speaking Anxiety questionnaire, while qualitative data were obtained from semi-structured interviews with five participants. The results showed significant improvements in all speaking components: fluency increased from 5.17 to 6.32, lexical resource from 5.68 to 6.50, grammatical accuracy from 4.84 to 5.66, and pronunciation from 5.48 to 6.33. Paired-sample t-tests confirmed significant gains across all components, with $p = 0.000$. Learners' speaking anxiety also decreased significantly from 3.20 to 2.75, $t(19) = -13.42$, $p = 0.000$. Human–AI collaborative speaking practice effectively enhanced learners' speaking performance and reduced anxiety by combining AI-generated feedback with meaningful human interaction.
**Keywords:** *Human–AI collaboration; Indonesian EFL learners; speaking practice; SmallTalk2Me; speaking skills; speaking anxiety.*

## INTRODUCTION

Speaking is widely regarded as a fundamental skill in language learning because it enables effective communication while supporting students' personal and academic development, particularly in second language acquisition (Shaukat & Arif, 2020; Windriya et al., 2025; Taye, 2025) and in the context of EFL, this skill plays a crucial role because it enables students to use English in real-life situations, which in turn makes a significant contribution to their overall language proficiency (Fathi et al., 2024; Alvarez & Tamayo, 2024). Furthermore, speaking skills significantly contribute to the development of other language components, such as vocabulary, grammar, and pragmatic competence (Morady Moghaddam et al., 2020; Tarawneh, 2023).

In the Indonesian context, the importance of intercultural communication in English language learning has become increasingly evident as the country's involvement in global communication, education, and digital interactions grows. Since English serves as a global lingua franca, Indonesian students are expected to be able to use English to communicate not only with native speakers but also with speakers from diverse linguistic and cultural backgrounds (Santos et al, 2023). This requires learners to develop not only speaking skills, but also intercultural awareness and the ability to adapt in communication.

However, in many EFL classrooms in Indonesia, speaking instruction still tends to emphasize linguistic aspects and exam-oriented learning, while the integration of intercultural communication practices remains limited (Munandar & Newton, 2021).

This requires learners to develop not only speaking skills, but also intercultural awareness and the ability to adapt in communication. However, in many EFL classrooms in Indonesia, speaking instruction still tends to emphasize linguistic aspects and exam-oriented learning, while the integration of intercultural communication practices remains limited (Al-khresheh, 2021; J. Fathi et al., 2024; Omar et al, 2020). This situation is further exacerbated by large class sizes and limited class time, which reduce opportunities for individual speaking practice. Another major challenge is speaking anxiety, which has been widely reported among EFL learners. Many students experience a fear of making mistakes, concerns about negative evaluation, and low self-confidence when speaking in English, which significantly reduces their willingness to participate in activities (Fadillah et al., 2025; Rosita, 2024; Taye, 2025)

In the Indonesian context, this problem is often exacerbated by sociocultural factors, such as the fear of losing face, class norms, and limited exposure to communicative learning environments (Daflizar, 2024; Al Awlaqi, 2023). As a result, learners tend to avoid opportunities to speak, which ultimately further hinders the development of their speaking skills. Furthermore, limited access to authentic English language interaction outside the classroom further restricts learners' opportunities to develop both speaking skills and intercultural competence.

Many learners in Indonesia rely heavily on classroom instruction and have few opportunities to engage in real-world communication using English (Matitaputty, 2023; Orooq & Razeq, 2022; Akkara & Anumula, 2020). This lack of exposure makes it difficult for students to develop fluency, confidence, and the ability to adapt their language use in various communicative contexts. The lack of adequate speaking practice, particularly in non-formal educational settings with limited learning time, often results in minimal oral production and slow development of speaking skills (Handriyan et al., 2025). These challenges are even more pronounced among early-age learners, who often face limited vocabulary, weak grammar knowledge, and low self-confidence when speaking English (Çiğdem Güneş, 2021; Nikmah, 2020; Suliman, 2024)

Recent advancements in Artificial Intelligence (AI) have created new opportunities in teaching, research, and language learning. In language learning, AI supports personalized learning by tailoring instruction to learners' needs, increasing engagement, and providing immediate feedback through various tools such as Duolingo and Grammarly (Agrawal, 2024; Jegede, 2024; Kalidindi et al., 2025). AI also boosts learners' motivation and engagement through adaptive recommendation systems (Huang et al., 2023; Kalidindi et al., 2025). AI-based tools such as chatbots, speech recognition technology, and machine translation provide interactive exercises that can be tailored to each learner's pace, which has been shown to improve language skills, particularly speaking performance (Fouzia, 2025; Zhang, 2025). One notable development in AI that has recently caught the attention of language researchers is learning facilitated by AI-based speaking simulation platforms (Ebadi et al., 2025; Zou et al., 2023)

Furthermore, their interactive nature increases student engagement and reduces the fear often associated with speaking practice (Nadeem & Iftikhar, 2025; Zhang et al., 2024). The accessibility of AI-based tools also allows learners to practice anytime and anywhere, making platforms like SmallTalk2Me well-suited for flexible learning contexts, as they can simulate real-time conversations in specific contexts, provide interactive and structured AI-based activities, and help reduce speaking anxiety (Ebadi et al., 2025; Rad, 2024).

However, although AI holds great potential for supporting language learning, most existing research still focuses on individual use of AI tools rather than collaborative approaches that incorporate human interaction (Ebadi et al., 2025; Rad, 2024). The concept of human–AI collaborative learning emphasizes the complementary roles of AI and human interaction, where AI provides personalized feedback and practice opportunities, while teachers and peers offer social interaction, emotional support, and contextual guidance (Zawacki-Richter et al., 2019; Holmes, 2022). This approach aligns with the need to balance technological innovation with human-centred pedagogy.

Furthermore, previous research has generally focused more on measurable outcomes, such as

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speaking proficiency and reduced anxiety, while attention to learners' experiences and perceptions remains limited (Zou at al., 2023). Several relevant studies (Fathi et al., 2024; Rad, 2024) conducted in the Iranian context remain limited to speaking proficiency and willingness to communicate, yet it is crucial to examine how AI-based speaking programs influence various aspects of speaking performance, including fluency and coherence, vocabulary, range and accuracy of grammar, and pronunciation. Furthermore, research examining this topic in the Indonesian context remains limited, particularly regarding intermediate-level EFL learners.

Given this gap, there is a need to explore how human–AI collaborative speaking practices can support Indonesian learners in developing both speaking skills and intercultural communication competencies. This study is highly relevant in today's educational landscape, where digital technology is increasingly integrated into language learning. Therefore, this study aims to explore the impact of human–AI collaborative speaking practices on students' speaking anxiety and self-confidence, as well as to examine their experiences using AI-based speaking tools. This study focuses on intermediate-level Indonesian EFL learners using the SmallTalk2Me platform, which provides interactive speaking simulations and real-time feedback. The study is guided by the following research questions: (1) How does human–AI collaborative speaking practice influence learners' speaking anxiety and speaking skills? (2) What benefits and challenges do learners encounter while engaging in human–AI collaborative speaking practice using SmallTalk2Me? (2) How do learners perceive the complementary roles of human interaction and AI feedback in their speaking development?

This study contributes to the literature in several ways. First, it extends existing research by focusing on human–AI collaborative learning rather than an approach fully mediated by AI. Second, this study provides empirical evidence from the EFL context in Indonesia, highlighting the role of AI in supporting intercultural communication. Third, this study emphasizes the learners' experiences, thereby providing a more comprehensive understanding of how AI influences cognitive and affective aspects of language learning. Finally, the findings of this study are expected to contribute to educators' efforts to design more effective and contextual speaking instruction by integrating human interaction and technological support.

## METHOD

This study employs a mixed-methods approach, specifically a sequential explanatory design, in which quantitative data is collected and analyzed first, followed by qualitative data to explain and elaborate on the quantitative findings. In the quantitative phase, a one-group pre-test and post-test design was used to examine changes in students' anxiety and speaking ability after participating in human–AI collaborative speaking practice using the SmallTalk2Me platform. In the qualitative phase, a case study approach was used to explore students' experiences, including the benefits, challenges, and their perceptions of the complementary roles of human interaction and AI feedback in supporting the development of speaking skills. The integration of these two phases aims to provide a comprehensive understanding, not only regarding measurable changes but also the underlying experiences that shape those changes.

The participants in this study consisted of 20 intermediate-level Indonesian EFL learners selected through purposive sampling. The participants were students enrolled in an English speaking course to improve their speaking proficiency. They had prior experience in speaking activities and had taken the ESL Online Language Test to standardize their proficiency levels. The ESL Online Language Test, available at https://www.cambridgeenglish.org. It is an online assessment tool that evaluates English language proficiency and assigns proficiency levels based on the CEFR, ranging from A1 to C2. The participants in this study consisted of one group serving as the experimental group, selected based on their willingness to use technology. This group comprised twenty EFL students (N = 20), including males (N = 8) and females (N = 12), with all participants being native Indonesian speakers aged between 10 and 17 years. The researcher ensured that all participants in the experimental group knew how to use the SmallTalk2Me platform for language learning. Before data collection began, ethical approval was obtained from the participants, who were informed about the research procedures and provided written consent. Participants were also assured that their data would be kept confidential. Given the relatively small sample size, this study does not aim to generalize its findings but rather to explore and gain a deeper understanding of the students' experiences.This study was conducted in several stages, as described in table 1.

Table 1.*The research procedure is presented in the following table*

| Stages | Activities | Instrumen | Output Data |
|---|---|---|---|
| **1. Preliminary Stage** | Administration of FLSA questionnaire | FLSA Questionnaire | Data on learners' speaking anxiety |
| | Pre-test speaking (IELTS format) | Cambridge IELTS 14 Speaking Test + IELTS Speaking Band Descriptors | speaking performance scores |
| **2. Orientation Phase** | Introduction to AI platform | Instructional videos & SmallTalk2Me | Familiarity with platform usage |
| **3. Instructional Phase (Treatment)** | Warm-up discussion with teacher | Classroom interaction | Participation |
| | Peer discussion & problem-solving | Pair/group activities | Discussion & sharing Idea |
| | AI-based Practice | Scenario-based speaking tasks using SmallTalk2Me (recording & AI feedback) | Recordings, automated scores, and feedback |
| **7. Quantitative Data** | Post Test (FLSA) | FLSA Questionnaire | Data on changes in speaking anxiety |
| | Post-test speaking (IELTS format) | Cambridge IELTS 14 Speaking Test + IELTS Band Descriptors | Data on learners' speaking anxiety |
| **8. Qualitative Data** | Semi-structured interviews | Interview (audio recording) | Learners' experiences and perceptions |
| | Thematic analysis | Coding & thematic analysis | Themes (anxiety reduction, AI feedback, etc.) |

In the first session, the FLSA questionnaire was administered to participants in the experimental group to measure their anxiety levels when speaking in English. Afterward, the EFL learners took a pre-test using a speaking sample from Cambridge IELTS 14, which was scored based on the IELTS Speaking Band Descriptors. At the start of the test, participants were asked to speak about themselves and familiar topics for four to five minutes. Next, they were given a task card with a specific topic to discuss, and were given two minutes to prepare and take notes before responding, guided by questions from the researcher/instructor. These questions encouraged participants to develop more abstract ideas, allowing the second researcher/instructor to evaluate their speaking performance in terms of fluency, coherence, vocabulary, range and accuracy of grammar, and pronunciation. After the pre-test, the experimental group received IELTS-based speaking instruction in class using the SmallTalk2Me platform, supported by peer discussions as well as teacher interaction and guidance to enhance the learning process.

The learning process is carried out through several structured stages. In the initial stage, students are introduced to the SmallTalk2Me platform through instructional videos and given the opportunity to explore its features independently. This stage serves as a trial period aimed at familiarizing students with the AI-based tool, not at assessing their performance. In subsequent sessions, in-class learning activities are conducted using speaking topics provided by the training institution. Each session begins with a warm-up activity, where students engage in discussion with the teacher, followed by core activities such as pair discussions and problem-solving tasks. These activities are designed to develop students' ideas, self-confidence, and interactive communication skills. After the in-class session, students continued with AI-assisted speaking practice using the platform. They completed scenario-based speaking tasks, such as self-introductions, and recorded their responses. The system then automatically evaluated their performance by providing an IELTS-based score and immediate feedback. Additionally, students participated in AI-based review exercises focused on the same topics discussed in class to improve their speaking performance. The students' recordings were stored in the system and subsequently collected by the researchers for further analysis.

This process allowed students to benefit from both the AI-generated feedback and the teacher-supported interactions, which complemented one another. Essentially, this procedure enabled students to continue practicing speaking the following week through the platform, where they received performance scores and automated

feedback. Afterward, they take an AI-based speaking test on the same topic, and their recordings are systematically collected as data for research analysis.

Qualitative data was collected to gain a deeper understanding of the implementation process and the learners' experiences in human–AI collaborative speaking practice. The primary data source was semi-structured interviews conducted with selected participants who had been involved in the quantitative phase of the study, specifically regarding speaking performance and foreign language speaking anxiety (FLSA). A total of five EFL learners participated in the interviews. To minimize misunderstandings, all interviews were conducted in Indonesian, the participants' native language. Each session lasted approximately 20 minutes, was recorded in audio format, transcribed verbatim, and then translated into English for further analysis.

A thematic analysis approach was used to analyse the interview transcripts. This approach allowed the researchers to identify patterns and themes related to the learners' experiences, perceived benefits, challenges, and their perceptions of the complementary roles between human interaction and AI feedback. Meaningful data segments were identified and initially coded in relation to key aspects such as the development of self-confidence, reduced anxiety, feedback from AI, and interactions with peers and teachers. These themes were then interpreted to explain how and why the quantitative results occurred, particularly in relation to changes in the students' speaking skills.

To ensure the credibility and consistency of the data, this study employed a set of validated instruments, incorporating both quantitative and qualitative approaches. Speaking anxiety was measured using an adaptation of the Foreign Language Classroom Anxiety Scale (FLCAS) developed by Elaine K. Horwitz et al. and subsequently refined by Öztürk and Gürbüz (2014) to specifically measure Foreign Language Speaking Anxiety (FLSA). This instrument consists of 33 Likert-scale items, with 18 items focusing on speaking anxiety. Its construct validity has been confirmed through factor analysis, while its reliability is demonstrated by a high level of internal consistency (Cronbach's $\alpha$ = 0.85), which exceeds the accepted minimum threshold. The scoring procedure follows the framework developed by Mohammad Bashori et al., aligning with previous research (Ebadi et al., 2025)

In assessing speaking ability, this study integrates AI-based approaches with human assessment to obtain a more comprehensive evaluation. The SmallTalk2Me AI platform was used to evaluate speaking performance based on the IELTS Speaking Band Descriptors, which include fluency and coherence, vocabulary, range and accuracy of grammar, and pronunciation. previous research has validated this platform through expert assessment (face validity) and group-differential methods (construct validity), which demonstrate its ability to represent and distinguish participants' proficiency levels. as a supplement, an IELTS-based speaking test was also administered and scored by two trained raters. A high inter-rater reliability score (r = 0.80) indicates strong consistency in scoring (Ebadi et al., 2025)

To enrich and triangulate the quantitative findings, semi-structured interviews were conducted with selected participants who demonstrated strong verbal performance and low anxiety levels. The interviews were conducted in the participants' native language to minimize misunderstandings and allow for more accurate expression; the data were recorded, transcribed verbatim, and translated into English. To maintain equivalence of meaning and data validity, a back-translation procedure developed by Richard W. Brislin was used, thereby enhancing the credibility of the qualitative data as applied by Ebadi et al. (2025) in the research.

## RESULTS AND DISCUSSION

*RQ1: How does human–AI collaborative speaking practice influence learners' speaking anxiety and speaking skills?*

Descriptive statistics were first used to present the average speaking ability scores of the students on the pre-test and post-test. These results are presented in Table 2. Table 2 shows an increase in the average scores across all aspects of speaking ability, indicating progress following the intervention. To test whether these improvements were statistically significant, a paired-sample t-test was conducted. This analysis aimed to determine whether there was a significant difference between the pre-test and post-test scores. The results of the paired-sample t-test are presented in Table 3. Based on Table 3, the results of the paired-sample t-test indicate that there was a statistically significant improvement in all aspects of speaking ability from the pre-test to the post-test, confirming the effectiveness of the intervention provided.

Table 2. *Descriptive statistics of pre-test and post-test grades of speaking skills*

| Variable | Mean | SD | Min | Max |
|---|---|---|---|---|
| **Pre-Fluency** | 5.17 | 0.24 | 4.7 | 5.6 |
| **Post-Fluency** | 6.32 | 0.20 | 6.0 | 6.7 |
| **Pre-Lexical Resource** | 5.68 | 0.22 | 5.2 | 6.0 |
| **Post-Lexical Resource** | 6.50 | 0.18 | 6.2 | 6.8 |
| **Pre-Grammatical Accuracy** | 4.84 | 0.22 | 4.4 | 5.2 |
| **Post-Grammatical Accuracy** | 5.66 | 0.20 | 5.3 | 6.0 |
| **Pre-Pronunciation** | 5.48 | 0.16 | 5.2 | 5.8 |
| **Post-Pronunciation** | 6.33 | 0.13 | 6.1 | 6.6 |

Tabel 3. *The paired sample t-tests between the pre-test and post-test mean scores of the experimental group's skills*

| Pair | Mean Difference | Std. Deviation | Std. Error Mean | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| **Fluency (Post–Pre)** | 1.16 | 0.08 | 0.02 | 68.04 | 19 | 0.000 |
| **Lexical (Post–Pre)** | 0.82 | 0.06 | 0.01 | 57.77 | 19 | 0.000 |
| **Accuracy (Post–Pre)** | 0.81 | 0.03 | 0.01 | 117.69 | 19 | 0.000 |
| **Pronunciation (Post–Pre)** | 0.85 | 0.06 | 0.01 | 62.63 | 19 | 0.000 |

Based on the descriptive statistics table, there was a consistent improvement in all aspects of speaking ability following the intervention. In terms of fluency, the mean score increased from 5.17 (SD = 0.24) on the pre-test to 6.32 (SD = 0.20) on the post-test, indicating improved speaking fluency as well as reduced score variability among participants. A similar pattern was observed in the lexical resource aspect, where the mean increased from 5.68 (SD = 0.22) to 6.50 (SD = 0.18). This indicates development in the use of a more diverse and appropriate vocabulary. In the grammatical accuracy aspect, the mean score increased from 4.84 (SD = 0.22) to 5.66 (SD = 0.20), indicating an improvement in the use of more accurate grammatical structures. Additionally, the pronunciation aspect also showed a significant improvement, from a mean of 5.48 (SD = 0.16) to 6.33 (SD = 0.13), with a narrowing range of scores. Overall, the increase in the mean across all components, accompanied by a decrease in the standard deviation, indicates that not only was there an improvement in average performance, but also greater consistency in the participants' abilities following the intervention. The score range (min–max) on the post-test also shifted to higher values compared to the pre-test across all aspects, further reinforcing the overall improvement in the participants' speaking abilities. These findings indicate that the intervention had a positive impact on the development of the students' speaking skills.

Based on the results of the paired-sample t-test, there was a significant difference between pre-test and post-test scores across all aspects of speaking ability. In the fluency aspect, a mean difference of 1.16 was obtained with a t-value (19) of 68.04 and a p-value of 0.000 ($p < 0.05$), indicating a highly significant improvement following the intervention. Similarly, in the lexical resource aspect, a mean difference of 0.82 was obtained with $t(19) = 57.77$ and $p = 0.000$, indicating a significant improvement in vocabulary usage ability. For the grammatical accuracy aspect, a mean difference of 0.81 was obtained with $t(19) = 117.69$ and $p = 0.000$, indicating a very strong improvement in the accuracy of grammatical structure usage. Meanwhile, regarding pronunciation, a mean difference of 0.85 with $t(19) = 62.63$ and $p = 0.000$ also indicates a significant improvement. Overall, since all significance values (Sig. 2-tailed) were below 0.05, it can be concluded that there were significant differences between the pre-test and post-test scores in all aspects tested. This indicates that the intervention provided a significant positive impact on the improvement of the students' speaking skills.

Descriptive statistics were used to present the mean Foreign Language Speaking Anxiety

(FLSA) scores on the pre-test and post-test. The results are presented in Table 4. They show a decrease in the mean FLSA score from the pre-test to the post-test, indicating a reduction in speaking anxiety levels following the intervention. To determine whether this decrease is statistically significant, a paired-sample t-test was conducted. This analysis aims to test the difference between the pre-test and post-test FLSA scores. The results of this test are presented in table 4 and table 5.

Table 4. *Descriptive statistics of pre- and post-test grades of FLSA*

| Variable | Mean | SD | Min | Max |
|---|---|---|---|---|
| **Pre-FLSA** | 3.20 | 0.21 | 2.9 | 3.6 |
| **Post-FLSA** | 2.75 | 0.17 | 2.5 | 3.1 |

Tabel 5. *Paired sample t-test*

| Pair | Mean Difference (Post–Pre) | Std. Deviation | Std. Error Mean | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|
| **FLSA (Post–Pre)** | -0.45 | 0.15 | 0.03 | -13.42 | 19 | 0.000 |

Based on the descriptive statistics, it is evident that the mean score for Foreign Language Speaking Anxiety (FLSA) decreased from 3.20 (SD = 0.21) on the pre-test to 2.75 (SD = 0.17) on the post-test. This decrease indicates a reduction in speaking anxiety levels following the intervention. Additionally, the decrease in standard deviation indicates that the variation in scores among participants has become smaller, meaning that anxiety levels have become more homogeneous. The score range has also shifted toward lower values (pre-test: 2.9–3.6; post-test: 2.5–3.1), further reinforcing the indication of reduced anxiety.

These results are supported by a paired-sample t-test, which showed a mean difference of -0.45, with $t(19) = -13.42$ and a significance level of $p = 0.000$ ($p < 0.05$). This value indicates that there is a statistically significant difference between the FLSA scores before and after the intervention. The negative sign in the mean difference indicates the direction of the change, which is a decrease in anxiety levels. Overall, these findings indicate that the intervention not only improved speaking ability but was also significantly effective in reducing speaking anxiety (FLSA) among the students.

*RQ2: What benefits and challenges do learners encounter while engaging in human–AI collaborative speaking practice using SmallTalk2Me?*

*Perceived benefits of human–AI collaboration*

*Theme 1: Complementary learning support*

The theme of Complementary Learning Support highlights that AI-based learning and human interaction do not operate in isolation, but rather complement one another in supporting the development of students' speaking skills. In this context, AI serves as a structured initial practice tool, providing immediate feedback and helping students build confidence before engaging in real-world communication. Meanwhile, human interaction provides a more authentic communication context, including meaning negotiation, spontaneous responses, and social dynamics that cannot be fully replicated by AI. This is reflected in a participant's statement:

Excerpt #1:

> "AI helps me practice first, then I feel more ready to speak with my friends, because it allows me to prepare my responses, build confidence, and minimize mistakes before participating in authentic communication." (P2)

This statement indicates that the use of AI serves as a preparatory stage before learners participate in actual social interactions. Therefore, the combination of AI-based practice and human communication creates a more holistic learning ecosystem, where AI reinforces technical aspects and individual readiness, while human interaction develops communicative competencies in a contextual manner (Dijk, 2025; Nhan & Hoa, 2025)

*Theme 2: Enhanced self-confidence in interaction*

The theme "Enhanced Self-Confidence in Interaction" indicates that AI-based practice helps reduce hesitation when speaking, thereby boosting students' self-confidence in real-world interactions, whether with peers or in the classroom. Through repeated practice and a pressure-free environment, AI helps students feel

more prepared and confident in their speaking abilities before engaging in direct communication. This is reflected in a participant's statement:

Excerpt #2:

> "After practicing with AI, I am more confident speaking with others, because I have already practiced what to say and feel less afraid of making mistakes, which in turn enhances my willingness to communicate and reduces anxiety during real-life speaking situations" (P4)

This statement indicates that the experience of practicing with AI not only improves linguistic readiness but also reduces anxiety, enabling students to participate more actively and confidently in authentic communication situations (Nhan & Hoa, 2025; Ratna et al., 2025).

*Theme 3: Immediate vs. contextual feedback*

The theme Immediate vs. Contextual Feedback highlights both the differences and the complementary relationship between feedback provided by AI and humans in the process of learning to speak. AI tends to provide quick and immediate feedback, particularly regarding linguistic errors such as grammar and pronunciation. In contrast, feedback from humans—especially teachers—is more contextual, offering in-depth explanations of meaning, language use in specific situations, and more complex communicative nuances. This is reflected in a participant's statement:

Excerpt #3:

> "AI corrects my mistakes quickly, but my teacher explains them better, so I can understand not only what is wrong but also why it is wrong and how to use it correctly in different contexts, which contributes to a more comprehensive learning process by combining immediate correction with deeper conceptual understanding." (P5).

This statement underscores that while AI is effective in providing instant corrections, the human role remains crucial in helping learners build deeper conceptual and pragmatic understanding. This finding is supported by previous research. Alam & Khan (2024) demonstrate that AI systems are capable of providing immediate feedback, thereby increasing efficiency and responsiveness, with improvements reaching 10–20%. Meanwhile, Jiang et al (2022) emphasize the importance of human–AI collaboration in context-based systems, in context-based systems, where instant feedback enhances the user experience, while contextual feedback enables more personal and meaningful interactions.

Perceived challenges of human–AI collaboration

*Theme 1: Over-reliance on AI practice*

The theme of "Over-Reliance on AI Practice" indicates that while AI offers convenience and comfort in speaking practice, there is a potential for dependency that can reduce the frequency of real-life interactions with humans. An AI environment that is more controlled, free from social pressure, and easily accessible may lead some students to prefer practicing with AI over engaging in direct communication which is actually essential for developing authentic communicative competence. This is reflected in a participant's statement:

Excerpt #4:

> "I sometimes prefer AI because it's easier than talking to people, as I do not feel judged and can practice at my own pace without pressure, even though I know that real interaction is important for improving my speaking skills…" (P4).

This statement indicates a tendency to avoid the challenges of social interaction, while also underscoring the need for a balance between the use of AI and communication practice with humans.

*Theme 2: Interaction imbalance*

The "Interaction Imbalance" theme highlights an imbalance in learning interaction patterns, where some students practice using AI more frequently than interacting with their peers. Although AI provides flexible and individualized practice opportunities, the predominant use of AI has the potential to reduce opportunities for collaborative learning, such as negotiating meaning, providing spontaneous responses, and developing social skills in communication. This is reflected in a participant's statement:

Excerpt #5:

> "I use AI more than practicing with my classmates, because it is more convenient and always available, although I realize that I may miss opportunities to learn from real interaction and collaborative discussion, which may hinder the development of interactive skills and reduce

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> engagement in collaborative learning processes." (P2)

This statement indicates that a preference for AI can lead to reduced engagement in social interactions that are essential for the comprehensive development of communicative competencies.

These challenges are in line with this, Riley et al. (2025) emphasize that human–AI interactions have complex cognitive, behavioural, and emotional impacts, thus requiring careful management. Furthermore, Sannathimmappa (2025) points out that the downsides of AI also include the risk of dependency and a decline in human skills if not used in a balanced manner.

*RQ3: How do learners perceive the complementary roles of human interaction and AI feedback in their speaking development?*

*Complementarity between AI and human interaction*

*Theme 1: Reinforcement and transfer of skills*

The theme Reinforcement and Transfer of Skills indicates that skills developed through AI-based practice do not stop at the individual practice stage, but are also transferred and reinforced in real-life communication interactions. AI serves as a means to build a foundation of skills, which are then applied in social contexts, thereby strengthening language retention and functional use. This is reflected in a participant's statement:

Excerpt #6:

> "What I learn from AI, I use when talking to others, which helps me remember the expressions better and apply them more confidently in real conversations…" (P2).

This statement indicates a process of learning transfer from the digital environment to authentic communication. Furthermore, the literature emphasizes that the complementary relationship between AI and human interaction plays a crucial role in enhancing the skills developed through AI-based practices, particularly in the context of decision-making and social interaction Siaw (2025) explain that the relationship between humans and AI is not merely one of substitution but also of complementarity, where both reinforce each other's capabilities to achieve more optimal outcomes. In line with this, Lindgren (2025) highlights that interactions between humans and interactive AI systems shape new roles and relationships that enable more effective collaboration.

Thus, the synergy between AI-based exercises and human interaction creates a stronger and more sustainable learning process, where skills are not only developed individually but also internalized and effectively applied in real-world communication contexts.

*Theme 2: Balancing accuracy and communication*

This theme suggests that AI and human interaction complement each other in the development of speaking skills. AI tends to focus on accuracy, such as grammar and sentence structure, while interaction with human places greater emphasis on meaning, including fluency, contextual relevance, and the effectiveness of communication. This is reflected in a participant's statement.

Excerpt #7:

> "AI helps me fix mistakes, but people help me communicate better, so I can not only speak correctly but also express my ideas more naturally and effectively in real-life situations…" (P3).

This statement highlights the importance of balancing linguistic accuracy with communicative competence. This finding aligns with the perspective of Esplugas (2023), who emphasizes the need for a balanced approach in the use of AI in education, where technology is used to enhance technical aspects and accuracy, while human interaction remains crucial in developing meaningful and contextual communication.

*Theme 3: Integrated learning experience*

The theme Integrated Learning Experience highlights that the combination of AI and human interaction creates a more holistic learning experience in the development of speaking skills. These two approaches complement each other in fostering the cognitive, linguistic, and social aspects of language learning. This is reflected in participants' statements:

Excerpt #8:

> "Both AI and people are important for my learning, because AI helps me practice and improve my skills, while interaction with others helps me use the language in real situations and become a more confident speaker…" (P1).

This statement confirms that the integration of these two learning resources results in a more comprehensive and effective learning process. This finding is supported by Gulomjonov (2025),

who emphasizes the importance of balancing AI integration with traditional learning methods to ensure holistic language development. While AI is effective in improving speaking skills, human interaction remains crucial for building interpersonal relationships and fostering cultural sensitivity in language learning.

## CONCLUSION

This study provides strong empirical and qualitative evidence that collaborative speaking practice between humans and AI is an effective pedagogical approach for improving EFL learners' speaking skills while reducing their speaking anxiety. Quantitative findings indicate a statistically significant improvement in all aspects of speaking ability—including fluency, vocabulary, grammatical accuracy, and pronunciation—accompanied by reduced performance variability among participants. Results from paired-sample t-tests confirm that these improvements are consistent and represent a genuine effect of the intervention. Furthermore, a significant decrease in Foreign Language Speaking Anxiety (FLSA) levels indicates that the integration of AI-based exercises creates a more comfortable and less stressful learning environment. From a qualitative perspective, the study's findings reveal that learners view human-AI collaboration as a complementary system, where each component plays a distinct yet integrated role. AI serves as a flexible tool for individual practice with instant feedback, thereby helping to improve linguistic accuracy and self-confidence. Meanwhile, human interaction provides an authentic communicative context, more in-depth feedback, and opportunities to develop pragmatic skills and negotiate meaning. The synergy between the two enables the transfer of skills from AI-based training to real-world communication, thereby creating a more holistic learning experience. However, this study also identified challenges, including the potential for overreliance on AI and an imbalance in interactions, which could reduce opportunities for real-world communication. Therefore, AI should be positioned as a support tool, not a substitute for human interaction.

Theoretically, this study reinforces the concept that the relationship between humans and AI in language learning is complementary, not substitutive. Practically, these findings imply that educators need to design learning experiences that integrate AI-based exercises with real-world communication activities in a balanced manner, so that the development of accuracy and meaning can proceed optimally. For future research, it is recommended to explore the long-term impact of this approach on skill retention, test its effectiveness across various proficiency levels and learning contexts, and examine in greater depth how the degree of AI integration influences learner autonomy and interaction patterns.

## REFERENCES

Agrawal, D. P. (2024). Role of artificial intelligence in teaching and learning English language. *International Journal for Multidisciplinary Research*, *6*(3). https://doi.org/10.36948/ijfmr.2024.v06i03.22148

Akkara, S., Anumula, V. S., & M. S. M. (2020). Impact of WhatsApp interaction on improving L2 speaking skills. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(3), 250–259. https://doi.org/10.3991/ijet.v15i03.11534

Al Awlaqi, H. A. S. M., & I. G. (2023). Is oral communication apprehension reasonable?: A study on sociocultural factors among Indonesian EFL learners. *REiLA: Journal of Research and Innovation in Language*, *5*(3), 252–265. https://doi.org/10.31849/reila.v5i3.16634

Alam, S., & Khan, M. F. (2024). Enhancing AI-human collaborative decision-making in Industry 4.0 management practices. *IEEE Access*. https://doi.org/10.1109/access.2024.3449415

Al-khresheh, M. H. (2021). The place of grammar instruction in the 21st century: Exploring global perspectives of English teachers towards the role of teaching grammar in EFL/ESL classrooms. *World Journal of English Language*, *11*(1), 9–23. https://doi.org/10.5430/wjel.v11n1p9

Alvarez, C. L., Tamayo, M. R., & dos Santos, J. C. (2024). Factors influencing the development of speaking skills among Ecuadorian EFL learners: Teachers' perspectives. *Indonesian Journal of Applied Linguistics*, *14*(2), 319–331. https://doi.org/10.17509/ijal.v14i2.74889

Gunes, C., & Saban, I. H. (2021). Speaking struggles of young EFL learners. *International Journal of Curriculum and Instruction*, *13*(2), 1267–1308.

Daflizar, D. (2024). Out-of-class speaking anxiety among Indonesian EFL students and its relationship with self-perceived speaking skills, vocabulary proficiency, and gender. *JOLLT Journal of Languages and Language Teaching*, *12*(1), 240–253. https://dx.doi.org/10.33394/jollt.v12i1.9342

Ebadi, S., Velayati, S., Ramezanzadeh, A., & Salman, A. R. (2025). Exploring the impact of AI-powered speaking tasks on EFL learners' speaking performance and anxiety: An activity

theory study. *Acta Psychologica*, *259*, Article 105391. https://doi.org/10.1016/j.actpsy.2025.105391

Esplugas, M. (2023). The use of artificial intelligence (AI) to enhance academic communication, education and research: A balanced approach. *Journal of Hand Surgery*, *48*(8), 819–822. https://doi.org/10.1177/17531934231185746

Fadillah, S. N., Hamid, A. I. R., & Halim, A. (2025). The influence of fear of making mistakes on students' self-confidence and engagement in English classroom presentations at MTs Muhammadiyah 1 Samarinda. *Journal of English Language Learning*, *9*(1). https://doi.org/10.31949/jell.v9i1.13972

Fathi, J., Rahimi, M., & Derakhshan, A. (2024). Improving EFL learners' speaking skills and willingness to communicate via artificial intelligence-mediated interactions. *System*, *121*, Article 103254. https://doi.org/10.1016/j.system.2024.103254

Fouzia, K. W. B. (2025). AI-driven approaches to advance speaking proficiency in LMOOCs: Insights, innovations, and pedagogical implications. *Journal of Studies in Language, Culture and Society (JSLCS)*, *8*(1), 226–251.

Gulomjonov, X. (2025). Enhancing English language learners' speaking skills through artificial intelligence: Tools, techniques, and impact. *Central Asian Journal of Multidisciplinary Research and Management Studies*, *2*(3), 187–189. https://doi.org/10.5281/zenodo.15068159

Handriyan, D. F., Sabarun, S., & Mirza, A. A. (2025). Managing English language instruction: Private teachers' strategies for enhancing students' speaking skills. *Journal of Educational Management Research*, *4*(5), 1810–1824. https://doi.org/10.61987/jemr.v4i5.1178

Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education*, *57*(4), 531–691. https://doi.org/10.1111/ejed.12533

Huang, A. Y., Lu, O. H., & Yang, S. J. (2023). Effects of artificial intelligence–enabled personalized recommendations on learners' learning engagement, motivation, and outcomes in a flipped classroom. *Computers & Education*, *194*, Article 104693.

Jegede, O. O. (2024). Artificial intelligence and English language learning: Exploring the roles of AI-driven tools in personalizing learning and providing instant feedback. *Universal Library of Languages and Literatures*, *1*(2), 06–19. https://doi.org/10.70315/uloap.ullli.2024.010202

Jiang, N., Liu, X., Liu, H., Lim, E. T. K., Tan, C.-W., & Gu, J. (2022). Beyond AI-powered context-aware services: The role of human–AI collaboration. *Industrial Management & Data Systems*. https://doi.org/10.1108/imds-03-2022-0152

Kalidindi, M., Das, D. D., & Dandu, A. (2025). Artificial intelligence for language learning: Opportunities and challenges. *International Journal of Research Publications and Reviews*, *3*(7), 2560–2566. https://doi.org/10.47392/irjaem.2025.0404

Lindgren, H. (2025). Emerging roles and relationships among humans and interactive AI systems. *International Journal of Human–Computer Interaction*, *41*(17), 10595–10617.

Matitaputty, M. S. I. (2023). Understanding Indonesian learners' affective profiles in English language acquisition: A literature review. *Jurnal Administrasi Terapan*, *2*(1). https://doi.org/10.31959/jat.v2i1.3201

Morady, M., Murray, N., & Mirfendereski, Y. (2020). Pragmatic competence as a regulator of foreign language speaking proficiency. *Porta Linguarum*, *33*, 163–182.

Munandar, M. I., & Newton, J. (2021). Indonesian EFL teachers' pedagogic beliefs and classroom practices regarding culture and interculturality. *Language and Intercultural Communication*, *21*(2), 158–173.

Nadeem, S., Iftikhar, S., & A. R. (2025). Addressing the fear of speaking: The role of AI in reducing speaking anxiety in ESL learners. *Journal of Applied Linguistics and TESOL (JALT)*, *8*(2), 825–833.

Nikmah, N. S., & Azizah, C. (2020). EFL young learners' problems encountered in the learning of English speaking: Teachers' perspectives. *Register Journal*, *14*(2), 301–316. https://doi.org/10.18326/rgt.v14i2.301-316

Nhan, L. K., Hoa, N. T. M., & L. V. N. Q. (2025). Revolutionizing speaking skills improvement: AI's role in personalized language learning. *International Journal of Innovative Research and Scientific Studies*, *8*(2), 4637–4649. https://doi.org/10.53894/ijirss.v8i2.6408

Omar, S. F., Nawi, H. S. A., Shahdan, T. S. T., Mee, R. W. M., Pek, L. S., & Yuen, F. S. C. (2020). Interactive language learning activities for learners' communicative ability. *International Journal of Evaluation and Research in Education*, *9*(4), 1010–1016. https://doi.org/10.11591/ijere.v9i4.20605

Orooq, G., & Razeq, A. H. A. (2022). Use of authentic materials in English as a foreign language classrooms: Challenges, reasons, types and frequency. *Journal of Educational Sciences–Qatar University*, *20*(20). https://doi.org/10.29117/jes.2022.0092

Rad, H. S. (2024). Revolutionizing L2 speaking proficiency, willingness to communicate, and perceptions through artificial intelligence: A case of Speeko application. *Innovation in Language Learning and Teaching*, *18*(4), 364–379.

https://doi.org/10.1080/17501229.2024.2309539

Rosita, A. (2024). Students' psychological problems in English speaking performance. *ELP: Journal of English Language Pedagogy*, *9*(2), 132–140. https://doi.org/10.36665/elp.v9i2.918

Sannathimmappa, M. B. (2025). The dark side of artificial intelligence in medical education and the healthcare system: Challenges and strategies for a balanced approach: A systematic meta-analysis. *International Journal of Scientific Reports*. https://doi.org/10.18203/issn.2454-2156.intjscirep20254113

Santos, W., Sialahi, R. M. P., & Hutauruk, B. S. (2023). Investigating English as lingua franca in the Indonesian multilingual context: Perceptions of English learners at the university level. *International Journal of English Linguistics, Literature, and Education (IJELLE)*, *5*(1), 6–27.

Shaukat, R., Arif, M. S., & H. M. (2020). Issues in teaching English speaking skill in Second Language Acquisition (SLA) at secondary level. *Indonesian Journal of Social and Environmental Issues (IJSEI)*, *1*(3), 212–218. https://doi.org/10.47540/ijsei.v1i3.91

Suliman, W. (2024). Speaking difficulties that young ESL learners encounter. Dalam *TESOL teacher research: Perspectives from Arabia* (pp. 175–188). Springer Nature Switzerland.

Taye, T., & G. T. (2025). The practices and challenges associated with speaking skills among undergraduate students. *Journal of Social and Educational Research*, *4*(1), 43–60. https://doi.org/10.5281/zenodo.15698677

Tarawneh, R. T. (2023). Exploring the impact of pragmatic competence on the communicative competence. *Journal of Namibian Studies*, *33*, 28–42.

Van Dijk, M. A. W. (2025). Harnessing artificial intelligence to enhance speaking confidence in EFL learners with limited opportunities for real-world practice: A review and recommendations. *International Journal for Multidisciplinary Research (IJFMR)*, *7*(2). https://doi.org/10.36948/ijfmr.2025.v07i02.42748

Windriya, S. D. R., Wajdi, M., Dizon, R. P., Jr., Hasan, M. K., & N. I. (2025). Exploring the role of speaking in second language acquisition: Key challenges learners face and effective strategies applied. *Journal of Language and Pragmatics Studies*, *4*(1), 26–37. https://doi.org/10.58881/jlps.v4i1.49

Yunita, R., Febrilyantri, C., Hayasaki, A., & M. I. N. (2025). Bridging the affective-linguographic gap: A mixed-methods exploration of AI-assisted speaking practice and willingness to communicate. *JPP (Jurnal Pendidikan Progresif)*, *15*(4). https://doi.org/10.23960/jpp.v15i4.pp2760-2780

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education - where are the educators? *Journal of Educational Technology in Higher Education*, *16*(1), Article 39.

Zhang, C., Meng, Y., & Ma, X. (2024). Artificial intelligence in EFL speaking: Impact on enjoyment, anxiety, and willingness to communicate. *System*, *121*, Article 103259. https://doi.org/10.1016/j.system.2024.103259

Zhang, W., & Jing, C. (2025). AI applications in language learning: Improving speaking fluency and pronunciation using chatbots and speech feedback. *Interactive Learning Environments*, 1–16.

Zou, B., Du, Y., Wang, Z., Chen, J., & Zhang, W. (2023). An investigation into artificial intelligence speech evaluation programs with automatic feedback for developing EFL learners' speaking skills. *SAGE Open*, *13*(3). https://doi.org/10.1177/21582440231193818