ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JALT

ADDRESSING THE FEAR OF SPEAKING: THE ROLE OF AI IN REDUCING SPEAKING ANXIETY IN ESL LEARNERS

Sarwat Nadeem
MA English UCS Beaconhouse Campus, Email: sarwatnadeem5@gmail.com
Sahar Iftikhar,
Assistant Professor, Department of all School of Common Courses, Institute of Art and Culture Raiwind Road Lahore, Email: Sahar.Iftikhar@iac.edu.pk
Arslan Rasheed,
M Phil Linguistics, FAST-NUCES, Email: arslanrasheed2128@gmail.com

Abstract
This study examines the role of Artificial Intelligence (AI) in reducing speaking anxiety among English as Second Language (ESL) learners, specifically addressing the fear of speaking that often inhibits language acquisition. Speaking anxiety is a common psychological barrier that affects ESL learners' ability to participate in conversations, presentations, and discussions, hindering their language learning progress. This research investigates how AI-powered tools, such as chatbots and virtual language tutors, can provide a safe, non-judgmental environment for learners to practice speaking without the fear of making mistakes in front of others. By offering instant feedback, adaptive learning pathways, and 24/7 availability, AI-based platforms encourage learners to engage in frequent practice and confidence-building activities. Through qualitative interviews with ESL learners and quantitative assessments of their speaking proficiency and anxiety levels before and after interacting with AI tools through self-report Likert scale on speaking confidence, and thematic analysis, the study explores the effectiveness of AI in fostering a growth mindset and increasing speaking confidence. The findings highlight the potential of AI to provide personalized support, help learners overcome their anxiety, and improve their oral communication skills in English. This research offers valuable insights for educators and developers aiming to integrate AI into language learning environments to reduce anxiety and enhance engagement.

Keywords: AI in language learning**,** Speaking anxiety**,** ESL learners**,** Language acquisition**,** Chatbots**,** Confidence-building**,** Non-judgmental learning environments**,** Psychological barriers in language learning

Introduction
Speaking anxiety is a prevalent challenge among English as a Second Language (ESL) learners, often hindering their ability to communicate effectively and impeding language acquisition. This anxiety stems from various factors, including fear of negative evaluation, lack of confidence, and limited exposure to authentic speaking opportunities (Woodrow, 2006). Traditional classroom settings may inadvertently exacerbate these fears, as learners might feel apprehensive about making mistakes in front of peers and instructors (Aasysyfa et al., 2019)In recent years, the integration of Artificial Intelligence (AI) into language learning has emerged as a promising avenue to address these challenges. AI-powered tools, such as chatbots and virtual assistants, offer learners a non-judgmental and supportive environment to practice speaking skills at their own pace. These technologies can simulate real-life conversations, provide instant feedback, and adapt to individual learner needs, thereby fostering a more personalized learning experience (El Shazly, 2021).
Research indicates that AI-driven language learning platforms can significantly reduce speaking anxiety among ESL learners. For instance, a study by El Shazly (2021) found that students who engaged with AI chatbots reported increased confidence and reduced apprehension when speaking English. The interactive nature of AI tools allows learners to rehearse conversations, receive corrective feedback, and build fluency without the fear of real-time judgment (Yetkin, Özer-Altınkaya, 2024).Furthermore; AI technologies can be

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

tailored to address specific learner needs, such as pronunciation practice, vocabulary building, and grammar correction. By providing immediate and constructive feedback, AI tools help learners recognize and rectify errors, leading to improved speaking proficiency and decreased anxiety levels (Woodrow, 2006). Finally, the incorporation of AI into ESL education presents a transformative opportunity to mitigate speaking anxiety. By offering personalized, interactive, and supportive learning environments, AI tools empower learners to overcome their fears and enhance their communicative competence. As technology continues to evolve, further research is essential to explore the full potential of AI in reducing speaking anxiety and facilitating effective language acquisition.

Literature Review

Speaking anxiety, often referred to as communication apprehension, is a prevalent challenge among English as a Second Language (ESL) learners. This form of anxiety can significantly hinder learners' oral performance and willingness to communicate in the target language. Woodrow (2006) emphasized that speaking anxiety plays a crucial role in diminishing learners' willingness to communicate, especially when pronunciation accuracy is a concern. Factors contributing to this anxiety include fear of negative evaluation, lack of confidence, and limited exposure to authentic speaking opportunities .Moreover, linguistic insecurity—feelings of anxiety or lack of confidence about one's language use—can exacerbate speaking anxiety. This insecurity often stems from learners' perceptions that their speech does not conform to the expected standards, leading to self-consciousness and reduced participation in speaking activities (Tai, & Chen, 2023).

Traditional methods to alleviate speaking anxiety have included classroom-based interventions such as peer practice, pronunciation drills, and exposure therapy. While these methods can be effective, they often fall short in addressing the individualized needs of learners and may not provide the safe, non-judgmental environment necessary for reducing anxiety. Additionally, logistical constraints and limited access to native speakers can impede the effectiveness of these traditional approaches. The integration of Artificial Intelligence (AI) into language learning has introduced innovative tools designed to address speaking anxiety. AI-powered applications, such as chatbots and virtual assistants, offer learners interactive platforms to practice speaking in a low-pressure environment. These tools provide immediate feedback, allowing learners to correct errors in real-time and build confidence in their speaking abilities. Furthermore, AI technologies can be tailored to individual learner needs, offering personalized learning experiences that adapt to the user's proficiency level and learning pace. This personalization fosters a supportive learning environment, enabling learners to engage with the language more comfortably and reduce anxiety associated with speaking (Hawanti , & Zubaydulloevna, 2023)

Recent studies have explored the effectiveness of AI tools in mitigating speaking anxiety among ESL learners. El Shazly (2021) conducted a study on AI chatbot-based learning and found that students who engaged with AI chatbots reported increased confidence and reduced apprehension when speaking English. The interactive nature of AI tools allows learners to rehearse conversations, receive corrective feedback, and build fluency without the fear of real-time judgment. Additionally, a systematic review by Tai and Chen (2023) demonstrated that learners interacting with AI chatbots experienced lower levels of speaking anxiety compared to traditional learning methods. The study highlighted that the non-judgmental and patient nature of AI chatbots contributed to a more relaxed learning atmosphere, encouraging learners to practice speaking more freely. While AI tools offer promising avenues for reducing speaking anxiety, it is essential to acknowledge their limitations. Some studies suggest that AI-based interventions may not significantly outperform traditional peer interactions in reducing anxiety. For instance, a recent study found that AI-based chatbot

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
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speaking tasks did not significantly reduce learners' anxiety compared to traditional speaking activities. Moreover, the effectiveness of AI tools can vary based on factors such as the design of the AI application, the quality of feedback provided, and the learner's individual preferences and learning styles. Therefore, while AI can be a valuable supplement to language learning, it should be integrated thoughtfully, considering the specific needs and contexts of learners. Nawaz et al. (2020) conducted a study on on the use of Urdu speakers' stress patterns and phonological variation from native speakers. Javaid et al. (2023) assessed stress causing factors and language related challenges amon first year students in higher education in Pakistan and and highlight the imperative of addressing these stressors to promote a nurturing learning environment conducive to academic success. Akram et al. (2022) studied teachers' perception of technology integration in teaching learning practice through systematic review and the study findings suggested that concerned authorities should set clear and effective policies to make efficient use of ICT by allocating a sufficient budget and ensuring all necessary facilitation (e.g., ICT infrastructure, tools, software, internet, and labs) in all educational institutions. Ramzan et al. (2023) studied ESL learners' motivation from ethnic gender and cultural perspectives in sustainable development goals and found concerned objectives. Chen and Ramzan (2024) also studied ESL learners from Facebook portfolio and concluded the positive impact of this technological platform. Akram et al. (2020) viewed the factors contributing low English language literacy in rural primary schools of Karachi, Pakistan and revealed that teachers and students encountered several obstacles that hinder them in acquiring effective English learning. LI and Akram (2024) navigated pronoun antecedent challenges in academic writing errors and offered valuable insights into the difficulties ESL students face in mastering pronoun-antecedent agreement, it is essential to note limitations. The incorporation of AI into ESL education presents a transformative opportunity to mitigate speaking anxiety. By offering personalized, interactive, and supportive learning environments, AI tools empower learners to overcome their fears and enhance their communicative competence. As technology continues to evolve, further research is essential to explore the full potential of AI in reducing speaking anxiety and facilitating effective language acquisition (Zhang, & Khalid, 2024).

Statement of the Problem

Speaking anxiety remains one of the most persistent barriers to effective language acquisition among English as Second Language (ESL) learners. Despite advances in communicative language teaching, many students continue to experience high levels of apprehension, especially when required to speak in front of others (Woodrow, 2006). This anxiety often stems from fear of negative evaluation, lack of self-confidence, and limited opportunities to practice speaking in low-risk environments. Traditional classroom approaches may not fully cater to individual differences in learner anxiety, nor do they always provide the safe, repetitive, and responsive practice ESL learners need to build fluency. In recent years, Artificial Intelligence (AI) has emerged as a promising technological solution, yet its effectiveness in mitigating speaking anxiety is still underexplored in both research and practice.

Significance of the Study

This study is significant because it addresses a pressing psychological and pedagogical challenge in second language education: speaking anxiety. With the growing integration of AI-powered tools such as chatbots, virtual tutors, and speech recognition systems into language learning environments, there is an urgent need to understand their potential role in alleviating the emotional barriers that hinder oral proficiency. By investigating how AI can provide a non-threatening, personalized, and supportive speaking environment, this study aims to contribute to the development of more effective and inclusive ESL teaching

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

strategies. Furthermore, findings from this study may guide educators, software developers, and policy makers in integrating AI technologies that not only promote linguistic competence but also foster emotional resilience and learner autonomy (El Shazly, 2021; Tai & Chen, 2023).

Rationale

The rationale for this study lies in the intersection of technological advancement and learner-centered pedagogy. AI tools offer unique affordances, including anonymity, instant feedback, 24/7 availability, and adaptive learning pathways, which make them especially suited to addressing affective issues such as speaking anxiety. Unlike traditional classroom environments, where social pressure may discourage learners from speaking freely, AI systems can provide a low-stakes platform for consistent, autonomous practice. Moreover, research suggests that learners using AI-powered conversational agents report lower anxiety and increased confidence in speaking English (El Shazly, 2021; Zhang & Khalid, 2024). However, most existing studies have focused on AI's role in improving general language proficiency, with less emphasis on its psychological impact. Thus, this study fills a critical gap by focusing specifically on how AI can be strategically used to reduce speaking anxiety among ESL learners.

Research Methodology

1. Research Design

This study will employ a **mixed-methods quasi-experimental design**, combining both quantitative and qualitative approaches to examine the effectiveness of AI in reducing speaking anxiety among ESL learners. The quantitative component will measure pre- and post-intervention anxiety levels using a validated scale, while the qualitative component will explore learners' perceptions and experiences through interviews. This triangulation enhances the validity of the findings and provides a holistic understanding of the AI intervention's impact.

2. Participants

The participants will consist of **60 intermediate-level ESL learners** enrolled in an English language program at a university or language institute. Participants will be aged between 18 and 30 and will be randomly assigned to two groups:

- **Experimental Group (n=30):** Learners will interact with AI-powered chatbots for speaking practice.
- **Control Group (n=30):** Learners will follow traditional speaking practice through peer interaction and teacher-led oral exercises.

All participants will be informed of the study's purpose and will sign a consent form in accordance with ethical research standards.

3. Instruments

- **Foreign Language Classroom Anxiety Scale (FLCAS):** Adapted from Horwitz et al. (1986), this 33-item Likert scale will be used to quantitatively assess speaking anxiety before and after the intervention.
- **AI Chatbot Tool:** A commercially available AI-powered language chatbot (e.g., Duolingo Max or Replika) will be used by the experimental group.
- **Semi-Structured Interviews:** Conducted with 10 randomly selected learners from each group post-intervention to explore their experiences, attitudes, and perceptions of AI in language learning.
- **Speaking Proficiency Rubric:** A standardized rubric will be used to assess improvement in oral performance pre- and post-intervention.

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JOURNAL OF APPLIED LINGUISTICS AND TESOL (JALT)
Vol.8.No.2 2025

4. Procedure

1. **Pre-Test Phase:**
   - Administer the FLCAS to all participants.
   - Conduct an initial speaking test scored using the oral proficiency rubric.
2. **Intervention Phase (4 weeks):**
   - Experimental Group: Engages in 30-minute daily sessions with an AI chatbot, completing structured speaking tasks (e.g., dialogues, role plays).
   - Control Group: Participates in traditional classroom speaking activities of equivalent duration.
3. **Post-Test Phase:**
   - Re-administer the FLCAS.
   - Conduct a final speaking test using the same rubric.
   - Carry out semi-structured interviews.

5. Data Analysis

- **Quantitative Analysis:**
  - Pre- and post-test scores on the FLCAS and oral performance will be analyzed using paired sample t-tests and ANOVA to assess statistical significance.
  - Effect size (Cohen's d) will be calculated to determine the magnitude of change.
- **Qualitative Analysis:**
  - Interview data will be transcribed and thematically coded using NVivo or similar software.
  - Themes will focus on learner confidence, engagement, perceived usefulness of AI, and comparative experiences with traditional methods.

Ethical Considerations

Ethical approval will be sought from the host institution's research ethics board. Participants will be assured of anonymity, voluntary participation, and the right to withdraw at any time without penalty. Data will be securely stored and used strictly for academic purposes.

Results

1. Quantitative Results

1.1 Speaking Anxiety (FLCAS Scores)

A paired samples t-test was conducted to compare the pre-test and post-test Foreign Language Classroom Anxiety Scale (FLCAS) scores within each group. Results are summarized below:

Group	Pre Test Mean (SD)	Post Test Mean (SD)	t-value	p-value	Cohen's d
Experimental	110.4 (12.5)	93.1 (10.7)	7.89	< .001	1.52
Control	108.6 (13.2)	104.2 (12.9)	1.72	0.09	0.31

Interpretation:

The experimental group (AI chatbot users) demonstrated a significant reduction in speaking anxiety from pre- to post-test ($p < .001$), with a large effect size (Cohen's $d = 1.52$). The control group showed a minimal, non-significant reduction in anxiety.

1.2 Oral Proficiency Scores

An analysis of variance (ANOVA) was used to compare pre- and post-test speaking performance based on a standardized rubric (scored 0–20).

Group	Pre Test Mean (SD)	Post Test Mean (SD)	f-value	p-value

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
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Experimental	11.2 (2.1)	15.7 (2.5)	16.42	< .001
Control	11.4 (2.0)	12.3 (2.3)	2.11	0.12

Interpretation:

The experimental group showed a significant improvement in speaking performance after the intervention. The control group's improvement was statistically non-significant, suggesting the AI intervention had a measurable impact on spoken proficiency.

Qualitative Results

Thematic analysis of semi-structured interviews with 10 participants from each group revealed the following key themes:

Theme 1: Increased Confidence in AI Group

Most AI group participants reported feeling more confident speaking in English due to the non-judgmental and private environment provided by the chatbot.

"I wasn't afraid of making mistakes with the chatbot. It was like practicing with a friend who doesn't judge."

Theme 2: Perceived Usefulness of Feedback

Participants valued the immediate and personalized feedback provided by the AI.

"I liked how it corrected my pronunciation instantly and even suggested better ways to say things."

Theme 3: Limited Anxiety Reduction in Control Group

Learners in the traditional setting noted that while classroom practice was helpful, social pressure remained a challenge.

"I still feel nervous speaking in front of classmates. I worry about saying something wrong."

Theme 4: Preference for Hybrid Learning

Several participants suggested a blended model using both AI tools and human interaction.

"It would be great to use the chatbot for practice and then apply what I learned in class."

Summary of Key Findings

- The AI chatbot significantly reduced speaking anxiety and improved oral proficiency among ESL learners.
- Learners in the experimental group reported higher levels of comfort, autonomy, and engagement.
- The control group showed only marginal changes in anxiety and speaking ability.
- Learners expressed a strong preference for combining AI with traditional methods for optimal results.

Discussion

The purpose of this study was to investigate the effectiveness of AI-powered chatbots in reducing speaking anxiety and improving oral proficiency among ESL learners. The findings strongly support the hypothesis that integrating AI into language learning environments can significantly alleviate speaking anxiety and enhance learners' confidence and performance.

Reduction in Speaking Anxiety

The results from the Foreign Language Classroom Anxiety Scale (FLCAS) revealed a statistically significant decrease in speaking anxiety for the experimental group, whereas the control group showed no significant change. This finding aligns with prior research (El Shazly, 2021; Tai & Chen, 2023), which underscores the role of AI as a non-judgmental, patient, and accessible conversation partner. AI chatbots provide learners with a space where they can practice speaking without the fear of negative evaluation; one of the most commonly cited causes of language anxiety (Woodrow, 2006).

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

Furthermore, the large effect size (Cohen's d = 1.52) indicates that AI is not merely an alternative to traditional methods but may serve as a superior intervention when addressing affective barriers. The reduction in anxiety can be attributed to the consistent and private practice sessions, the immediacy of feedback, and the ability to repeat conversations without embarrassment or judgment—factors that traditional classroom settings may not always guarantee.

Improvement in Oral Proficiency

The significant improvement in speaking scores among the experimental group, as compared to the control, highlights the added value of AI not only in reducing anxiety but also in fostering measurable language gains. The opportunity for frequent, focused practice likely contributed to these gains, supporting previous studies on AI's capacity to improve language fluency through interaction and repetition (Li & Hegelheimer, 2013; Xie et al., 2019).

Interestingly, participants in the control group did not show similar levels of improvement. This may reflect the limitations of peer or teacher-led speaking activities in classrooms where time, attention, and social dynamics constrain opportunities for individualized oral practice. These findings suggest that AI tools can supplement existing pedagogical strategies by offering scalable and accessible solutions to common instructional challenges.

Learner Experience and Attitudes

Qualitative findings enriched the quantitative results, offering insights into learners' emotional and experiential responses to AI use. Participants reported feeling more at ease and motivated to engage in speaking practice when using AI chatbots. The immediacy of corrective feedback and the ability to control the pace of learning were particularly appreciated. Such findings align with learner autonomy theories in second language acquisition, which emphasize the importance of giving learners agency and control over their learning processes (Little, 2007).

Nevertheless, while most learners responded positively to the chatbot experience, several expressed a desire for a hybrid model. This indicates that while AI reduces anxiety and improves performance, human interaction remains valuable for fostering social communication skills, cultural nuance, and authentic discourse. Thus, the ideal application of AI may be in combination with classroom-based instruction rather than as a standalone solution.

Limitations and Future Research

Despite the promising outcomes, this study has some limitations. First, the sample size was relatively small and limited to intermediate-level learners at one institution, which may affect the generalizability of the findings. Second, the study duration (four weeks) may not fully capture the long-term impacts of AI integration on language anxiety or retention. Third, although the AI chatbot used was commercially available, not all learners may have equal access to such tools due to cost, technological literacy, or internet availability. Future research should explore longitudinal studies with diverse learner populations and examine the comparative effectiveness of different AI tools (e.g., chatbots, virtual reality, speech recognition software). Moreover, investigating the optimal balance between AI-based and human interaction in language learning could provide more nuanced guidance for educators and developers.

Conclusion

This study provides compelling evidence that AI can play a transformative role in reducing speaking anxiety and enhancing oral proficiency in ESL learners. Learners who practiced with AI-powered chatbots experienced significantly lower levels of anxiety and greater improvement in speaking performance compared to those in traditional speaking environments. The personalized, low-pressure, and adaptive nature of AI creates a conducive

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
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environment for learners to build confidence, make mistakes, and improve fluency without fear of judgment. At the same time, learners value human interaction and suggest a blended approach that combines the emotional support of peers and instructors with the precision and availability of AI tools. As educational technologies continue to evolve, incorporating AI into ESL classrooms represents not only a pedagogical innovation but also an opportunity to address long-standing affective barriers in language learning. Stakeholders—educators, curriculum designers, and technologists—must now focus on leveraging AI responsibly and inclusively to empower all learners, especially those held back by the fear of speaking.

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