



The Impact of ELSA Speak on Improving English Speaking Skills and Reducing Speaking Anxiety Among Junior High School Students

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ABSTRACT

This study investigates the effect of using the artificial intelligence (AI)-based application ELSA Speak on enhancing English speaking skills and reducing speaking anxiety among 25 junior eighth-grade students at SMP Negeri 32 Semarang, Indonesia. This study used a mixed-methods approach with a single-group pretest-posttest design. Quantitative data were collected through speaking tests and the Foreign Language Classroom Anxiety Scale (FLCAS) questionnaire and analyzed using the Wilcoxon Signed-Rank Test, while qualitative data were gathered through interviews and subjected to thematic analysis with the support of MAXQDA software. The results demonstrated a significant improvement in students' speaking skills from pre-to post-test, with a very large effect size and reduced speaking anxiety. Qualitative findings revealed that ELSA Speak enhanced students' speaking abilities, particularly in pronunciation and vocabulary mastery, while effectively reducing speaking anxiety and fostering greater confidence in oral communication.

Introduction

In today's era, rapid technological advancement has significantly influenced various aspects of life, including education (Akour & Alenezi, 2022). In the context of English language learning, technology has transformed instructional practices and traditional teaching approaches, which were often characterized by teacher-centered and monotonous, have now evolved into a more interactive, engaging, and learner-centered learning environment (Yanti et al., 2024). Furthermore, technology facilitates innovation and enhances learning effectiveness (Timotheou et al., 2023), encouraging learners to engage actively in the learning process (Jambangan & Serrano, 2025).

Advanced artificial intelligence (AI)-based technologies, particularly chatbots, offer innovative learning solutions. According to Iswari et al. (2024), chatbot-based language learning utilizes chatbots to facilitate language practice through everyday conversations,

answer questions about language learning, and provide assessment and feedback on students' learning outcomes. These technologies enable students to learn flexibly outside the physical classroom through constantly evolving digital platforms, thereby supporting independent language skill development (Alshammary & Alhalafawy, 2023).

English serves as the dominant international language of instruction in many countries, and beyond academic settings, English proficiency is essential for social life in today's globalized world (Rose et al., 2022). In academic settings, oral English skills are particularly important, enabling students to participate actively in class discussions, group projects, and oral presentations while understanding English-medium instructions (Yüce & Curle, 2025). Well-developed speaking skills significantly impact students' self-confidence, communication skills, and employment opportunities (Mahdi, 2022).

However, students in Indonesia, particularly at the junior high school level, face significant challenges in developing their English-speaking skills. Many experiences, including limited speaking ability and high speaking anxiety, are psychological barriers that can affect the learning process and effective English use (Marpaung & Fithriani, 2023). These anxieties arise when students must speak or communicate in English, particularly in academic settings (Alamri & Qasem, 2024), stemming from factors such as lack of mental preparedness, limited vocabulary, improper pronunciation, and inadequate grammatical competence. (Al Hanake, 2024). Speaking anxiety in language learning can be conceptualized through Horwitz et al.'s (1986) Foreign Language Classroom Anxiety framework, which identifies anxiety as a multifaceted construct encompassing communication apprehension, test anxiety, and fear of negative evaluation. Additionally, the study posits that emotional variables, such as anxiety, act as a filter that can impede language acquisition by affecting learners' motivation and input processing. These theoretical perspectives highlight the critical role of anxiety in shaping learners' oral performance and justify the focus on anxiety reduction in this study.

To address these interconnected challenges, Elsa Speak, an AI-based mobile application, offers a promising alternative that encourages active learning while reducing anxiety (De Venecia, 2026). According to Pham and Pham (2025), the ELSA Speak feature includes skills, topics, levels, and progress tracking that enable users to access materials based on their proficiency level, including initial and final sounds, minimal pairs, shwa, the/th/sounds, and consonant clusters. Critically, these features address anxiety drivers: self-paced learning eliminates time pressure and social judgment, progress tracking provides motivational scaffolding, and corrective feedback without human presence removes the fear of peer or teacher evaluation, thereby creating a psychologically safe environment for pronunciation practice (Khalizah & Damanik, 2024).

Although research on AI-supported English language learning has advanced rapidly, studies specifically examining the effectiveness of ELSA Speak in improving speaking skills while reducing speaking anxiety remain limited. Existing research has predominantly focused on linguistic outcomes, such as pronunciation accuracy, vocabulary development, and speaking performance, with comparatively less attention to affective factors, such as anxiety, that significantly influence students' oral performance (Mamang et al., 2023). Speaking anxiety constitutes a major psychological barrier that undermines learners' self-confidence and restricts their participation in oral communication (Pusparini et al., 2025). Despite the importance of speaking in academic and social contexts, it remains one of the most difficult language skills to develop, primarily because of high anxiety levels (Zou et al., 2023; Malinda & Mulyani, 2024).

Therefore, this study addresses a practical gap in developing students' speaking performance by investigating the integration of AI-supported learning tools into the curriculum. This study is expected to provide practical and theoretical insights into the effective use of AI technologies to support language learning and development.

This study aimed to analyze the effect of ELSA Speak on reducing speaking anxiety and improving the speaking skills of students at SMP Negeri 32 Semarang. More specifically, this study focused on the following three questions: 1) To what extent does ELSA Speak improve students' speaking skills? 2) How does the use of ELSA Speak contribute to reducing students' speaking anxiety in English as a Foreign Language? 3) What are students' perspectives on ELSA Speak as a digital learning medium for practicing English speaking skills?

Research Methods

This study used a mixed-methods approach to obtain a comprehensive understanding of the effects of the AI-based ELSA Speak application on students' speaking performance and anxiety. By combining quantitative and qualitative methods, a mixed-methods approach enables researchers to explore a research problem from multiple perspectives and gain deeper insights into the problem. (Creswell & Creswell, 2017). Quantitatively, the study adopted a pre-experimental design using a single-group pre- and post-test model to examine changes in students' speaking performance and anxiety levels following the intervention. Qualitative data were collected through semi-structured interviews to explore students' experiences and perceptions of using ELSA Speak. The integration of both quantitative and qualitative data enabled a more comprehensive interpretation of the effectiveness of the intervention

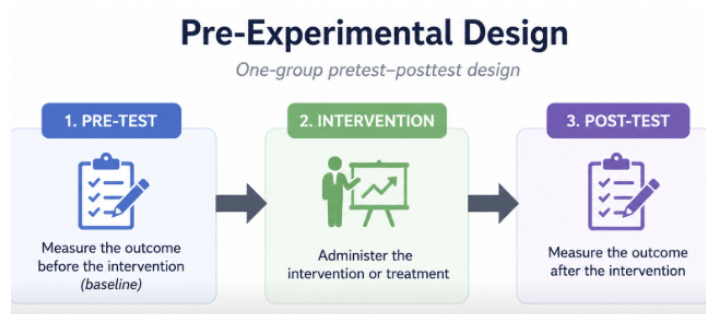


Figure 1. Research Design

Figure 1 illustrates the overall research design. The study employed a one-group pretest and posttest model, in which participants completed speaking performance and speaking anxiety assessments before and after the intervention. Quantitative data were collected through speaking tests and questionnaires, while qualitative data were gathered through semi-structured interviews. In addition, students' speaking performance was continuously monitored through the speaking activities conducted during the intervention period. The instructional intervention integrated cooperative learning strategies with the AI-based ELSA Speak application to enhance students' speaking skills and reduce speaking anxiety.

The research procedure, as shown in Figure 2, comprised six sessions. Two sessions were assigned to the administration of the pre-test and post-test, while four sessions were dedicated to the integration of ELSA Speak into the learning process

Conventional Learning

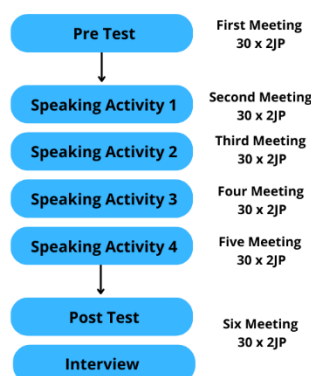


Figure 2. Research Procedure

During the intervention phase, the students completed a variety of speaking tasks provided by the application. The learning activities were organized around predetermined topics that aligned with the study objectives (Table 1).

Table 1. The Activity of Experimental Class

Meeting	Time Allocation	Experiment Class Activities
1st Meeting	60 minutes	- Pre-test of Speaking Anxiety and Speaking test - Each student should speak for 2 minutes on the topic of 'my favorite place' with a friend - Teacher introduces the ELSA Speak application - Teacher asks the students to download the ELSA Speak application
2nd Meeting	60 minutes	- The teacher explains the material on 'my family.' - Students complete speaking exercises and vocabulary activities based on the topic - Each student practices speaking with an Elsa Speak on the topic 'my family' for 2 minutes - Teacher assesses and evaluates common errors during speaking with ELSA
3rd Meeting	60 minutes	- The teacher explains the material of 'where I am from/my origin.' - Students complete speaking exercises and vocabulary activities based on the topic - Each student practices speaking with an Elsa Speak on the topic 'where I am from/origin' - The teacher assesses and evaluates common errors after speaking with Elsa
4th Meeting	60 minutes	- The teacher explains the material: 'My favorite friend.' - Students complete speaking exercises and vocabulary activities based on the topic - Each student practices speaking with an Elsa Speak on the topic 'My favorite friend'

		▪ The teacher assesses and evaluates common errors after speaking with Elsa
5th Meeting	60 minutes	▪ The teacher explains the material about 'My Hobby.' ▪ Students complete speaking exercises and vocabulary activities based on a topic. ▪ Each student practiced speaking with an Elsa Speak on the topic 'My Hobby.' ▪ The teacher assesses and evaluates common errors after speaking with Elsa
6th Meeting	60 minutes	▪ Post-test of Speaking Anxiety, and Post-test Speaking performance with Elsa on the topic 'My dream place.'

The participants of this study were 25 eighth-grade students from SMP Negeri 32 Semarang, Indonesia. One class was purposively selected as the experimental group. This class was considered representative for assessing the impact of ELSA Speak on students' speaking proficiency and anxiety. Furthermore, the participants provided valuable insights into their learning experiences, perceptions, and responses regarding the integration of the application into the English learning process

At the beginning of the study, the students completed a pre-test to assess their initial speaking performance and anxiety levels. The speaking performance was assessed using a rubric adapted from Brown (2004), which assessed five aspects of speaking proficiency: pronunciation, grammar, vocabulary, fluency, and comprehension (Table 2). To measure speaking anxiety, students completed the Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz et al. (1986). The same instruments were administered at the end of the intervention as a post-test to determine any changes in students' speaking performance and their anxiety levels.

Table 2. Speaking Performance Scoring Rubric Adapted from Douglas Brown (2004)

Score	Grammar	Vocabulary	Comprehension	Fluency	Pronunciation
1	Grammatical errors are also common.	Speaking vocabulary is inadequate for expressing anything other than the most elementary needs.	Able to understand simple questions and statements if delivered with slow speech, repetition, or paraphrasing.	No specific fluency was noted.	Pronunciation errors are also common.
2	Usually able to handle elementary constructions accurately, but does not confidently control grammar.	Has a speaking vocabulary sufficient to express himself simply	Able to understand the gist of most conversations.	Able to handle social situations with confidence, but not with facility.	The accent was intelligible, although often quite faulty.

3	The grammar control is good.	Vocabulary is broad enough that he rarely has to grope for a word	Comprehension is quite complete at a normal speech rate.	Able to discuss particular interests in competence with reasonable ease.	Accents may sound obviously foreign.
4	Grammatical errors were infrequent.	Able to understand and participate in any conversation	Able to understand any conversation	Able to use the language fluently.	Pronunciation errors are rare.
5	This is equivalent to the level of an educated, native speaker.	Speech at all levels is fully accepted by educated native speakers.	This is equivalent to the level of an educated native speaker.	Has complete fluency in the language.	This is equivalent to that of an educated native speaker.

During the treatment phase, ELSA Speak was used as the primary instructional tool for speaking practice. Students engaged in various speaking activities and completed tasks provided by the application. The intervention was conducted over four sessions, allowing students to practice pronunciation, fluency, and oral communication skills in an interactive, technology-supported learning environment. The final speaking score was calculated by averaging the scores obtained across the five speaking components and converting the result into a percentage scale to facilitate the interpretation of students' proficiency levels.

Quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics were first employed to summarize students' speaking performance and their anxiety scores. As the study adopted a one-group pre-test and post-test design with a relatively small sample size, the Wilcoxon Signed-Rank Test was used to determine whether there were statistically significant differences between the pre-test and post-test scores for both speaking performance and speaking anxiety. Qualitative data obtained from the semi-structured interviews were analyzed thematically. The analysis process was supported by MAXQDA, which facilitated the systematic coding, organization, and interpretation of the interview data to identify recurring themes related to students' experiences and perceptions of using the ELSA Speak app.

Findings

This section presents the findings regarding the impact of ELSA Speak on the speaking skills and anxiety of students at SMP Negeri 32 Semarang. The research data were analyzed using descriptive statistics and the MAXQDA software. The results indicate that ELSA Speak improves students' speaking skills, particularly in terms of pronunciation and vocabulary mastery, while reducing speaking anxiety.

Quantitative Finding

The Effect of ELSA Speak on Students' Speaking Skills

Table 3. The results of the Normality test and the Wilcoxon Signed-Rank test

Variables	Shapiro-Wilk		Wilcoxon		
	Statistic	Sig.	Z	Sig.	Effect Size (r)
Speaking Performance	0.862	0.003	-4.384	.001	0.876

$p > 0.05$

Table 3 presents the results of the normality and Wilcoxon Signed-Rank tests for students' speaking performance. The Shapiro-Wilk test indicated that the speaking performance data were not normally distributed ($p = .003 < .05$). Therefore, the Wilcoxon Signed-Rank test was employed to examine the differences between the pre- and post-test scores.

The results revealed a statistically significant improvement in students' speaking performance after the implementation of ELSA Speak ($Z = -4.384$, $p = .001$). A negative Z value indicates that the post-test scores were significantly higher than the pre-test scores. Furthermore, the effect size ($r = .876$) was categorized as very large, suggesting that the intervention had a substantial impact on students' speaking performance. These findings indicate that the integration of ELSA Speak effectively enhanced students' English-speaking skills.

Table 4. The result of the Descriptive Test: Speaking Performance

Variables	Pre-test			Post-test		
	Sum	Mean	SD	Sum	Mean	SD
Speaking Skills	1012	40.48	11.962	1576	63.04	8.815

$p > 0.05$

Table 4 presents the descriptive statistics for students' speaking performance before and after the intervention. The pre-test results showed a total score of 1,012, a mean score of 40.48, and a standard deviation of 11.96, indicating relatively low speaking proficiency and considerable variation in scores among students. Following the intervention, the post-test results increased substantially, with a total score of 1,576, a mean score of 63.04, and a standard deviation of 8.82. The increase in the mean score from 40.48 to 63.04 demonstrates a notable improvement in students' speaking performance after using the app. In addition, the lower standard deviation in the post-test suggests that students' speaking abilities became more consistent after the intervention.

The Effect of ELSA Speaking Activities on Students' Speaking Anxiety

Table 5. The Normality Test and the Wilcoxon Signed-Rank Test

Variables	Shapiro-Wilk		Wilcoxon		
	Statistic	Sig.	Z	Sig.	Effect Size (r)
Speaking Anxiety	0.927	0.082	-4.288	.001	0.875

$p > 0.05$

Table 5 presents the results of the normality and Wilcoxon Signed-Rank tests for speaking anxiety. Although the post-test anxiety scores were normally distributed ($p = .082 > .05$), the Wilcoxon Signed-Rank test was employed to examine the differences between the paired pre-test and post-test scores.

The results showed a statistically significant reduction in students' speaking anxiety after the intervention ($Z = -4.288$, $p = .001$). A negative Z value indicates that students experienced lower levels of anxiety in the post-test compared to the pre-test. Moreover, the effect size ($r = .875$) was categorized as very large, indicating that the implementation of ELSA Speak had a strong effect on reducing students' speaking anxiety. These findings suggest that the application not only improved students' speaking performance but also created a more supportive and less stressful environment for speaking practice.

Table 6. The result of the Descriptive Test: Speaking Anxiety

Variables	Pre-test Questionnaire			Post-test Questionnaire		
	Sum	Mean	SD	Sum	Mean	SD
Speaking Anxiety	2591	107.96	12.495	1470	61.25	10.225

The descriptive statistics presented in Table 6 further support this finding. Before the intervention, the students obtained a total anxiety score of 2,591, with a mean score of 107.96 and a standard deviation of 12.50, indicating relatively high levels of speaking anxiety. After the intervention, the total anxiety score decreased to 1,470, with a mean score of 61.25, and a standard deviation of 10.23. The substantial decrease in the mean score from 107.96 to 61.25 demonstrates a considerable reduction in students' speaking anxiety levels. Overall, the descriptive and inferential analyses consistently indicated that ELSA Speak contributed significantly to lowering students' anxiety when speaking English.

Qualitative Findings: Students' Perception of Using Elsa Speak

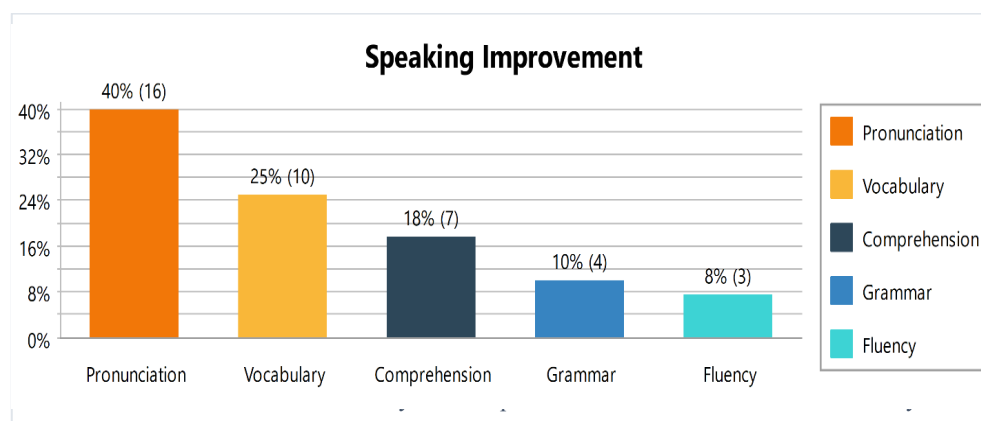
**Figure 3.** Students' Speaking Improvement

Figure 3 presents the results of the MAXQDA analysis regarding students' perceptions of using ELSA Speak to improve their English-speaking skills. The findings revealed that students generally held positive perceptions of the application and considered it beneficial for enhancing various aspects of their speaking proficiency.

Among the identified themes, pronunciation emerged as the most frequently reported area of improvement (40%). Vocabulary development (25%) was also frequently mentioned, as students were exposed to new words and expressions through repeated speaking practices. In addition, students reported improvements in comprehension (18%), grammar (10%), and speaking fluency (8%), although these aspects were discussed less frequently than pronunciation and vocabulary.

Overall, the qualitative findings support the quantitative results by demonstrating that ELSA Speak positively influenced students' speaking skills development. The application was perceived as an effective learning tool that provided immediate feedback, individualized learning opportunities, and flexible, speaking practice. These features helped students improve their speaking skills, while increasing their confidence and reducing anxiety when communicating in English.

Discussion

Based on the results of this study, the use of the AI-based ELSA Speak application was effective in improving students' speaking skills and reducing their anxiety. The results show a significant improvement in students' speaking performance after integrating ELSA Speak into the learning process. This improvement is reflected in the average speaking score rising from 40.48 on the pre-test to 63.04 on the post-test. Additionally, the Wilcoxon test showed a significance value of 0.001 ($p < 0.05$) and an effect size of 0.876, indicating a very large effect. These findings suggest that ELSA Speak contributes positively to the development of students' speaking skills, particularly in terms of grammatical accuracy and fluency.

Furthermore, ELSA Speak significantly reduced speaking anxiety. The average speaking anxiety score decreased from 107.96 in the pretest to 61.25 in the posttest. The results of the Wilcoxon test showed a p-value of 0.001 ($p < 0.05$) with an effect size of 0.875, indicating a strong effect. This finding shows that the features provided by ELSA Speak, particularly speech recognition and immediate feedback, enable students to practice speaking with greater confidence and reduce their fear of making mistakes.

Additionally, MAQDA analysis showed that the use of ELSA Speak contributed positively to the improvement of students' English speaking skills. Pronunciation was identified as the aspect with the highest improvement rate (40%), followed by vocabulary (25%), comprehension (18%), grammar (10%), and fluency (8%). Students also reported that ELSA Speak provides an interactive, flexible, and personalized learning experience through repeated practice and immediate feedback. Therefore, ELSA Speak is considered an innovative learning tool that effectively supports the development of speaking skills while reducing students' anxiety in English Speaking.

Conclusion

This study concludes that the implementation of the AI-based ELSA Speak application significantly improved students' English-speaking performance and reduced their speaking anxiety. The quantitative findings demonstrated substantial gains in students' speaking skills after the intervention, while the qualitative findings revealed positive perceptions of the application as a learning tool for students. Improvements were observed in several aspects of speaking, particularly pronunciation, vocabulary, comprehension, grammar, and fluency.

Furthermore, ELSA Speak was found to be effective in reducing students' speaking anxieties. The application's AI-powered features, including voice recognition and real-time feedback, enabled students to practice speaking in a supportive, low-pressure environment. As a result, students became more confident and less fearful of making mistakes during speaking activities. The qualitative findings further indicated that students perceived ELSA Speak as an interactive, flexible, and engaging platform that facilitated independent speaking practices.

Overall, the findings suggest that ELSA Speak is an innovative and effective AI-based learning tool that supports both the development of speaking proficiency and the reduction of speaking anxiety among EFL learners. Therefore, English teachers are encouraged to integrate AI-powered applications such as ELSA Speak into language instruction to create more engaging, personalized, and confidence-building speaking-learning experiences.

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