



Improving English Speaking Skills in High School Students Through Elsa AI Mobile App Integration

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Abstract

Despite the growing interest in artificial intelligence for language education, empirical evidence regarding the use of AI tools like ELSA Speak in senior high school classrooms remains limited, especially in rural Indonesian settings. To address this issue, this study investigates how integrating the ELSA Speak app into regular English instruction affects EFL students' speaking abilities. The research utilized a quasi-experimental pre-test and post-test control group design involving 50 twelfth-grade students at SMAN 01 Luwu. Half of the students learned using the app (experimental group), while the rest followed standard teaching methods (control group). Based on the Mann-Whitney U test, the students who used ELSA Speak achieved significantly higher post-test scores than those in the control group ($U = 483.00$, $p = 0.001$, $r = 0.46$). Specifically, the AI-supported learning process led to major improvements in the students' pronunciation, fluency, and speaking confidence. In conclusion, this study strengthens the existing literature on Mobile-Assisted Language Learning (MALL) by showing that combining AI applications with traditional teaching can successfully solve the lack of speaking practice and enhance specific oral language skills in high school environments.

1. Introduction

Artificial Intelligence (AI) is transforming the way we interact with the world, often in ways we don't even notice. At its essence, AI is about creating tools

and systems that can mimic human thinking—like learning, solving problems, or making decisions. From voice assistants helping us organize our lives to innovations in healthcare saving lives, AI has quietly woven itself into the fabric of daily life. It's no longer just futuristic; it's here, and it's changing everything.

In education, the potential for AI is enormous. Imagine a system that adapts to the unique needs of each student, helping them learn at their own pace and in their own way. It's an idea that's as exciting as it is daunting. While technology can open doors, it also raises questions about how we balance innovation with the human elements of teaching—empathy, creativity, and connection. This paper explores how AI is reshaping education, diving into its potential benefits, the challenges we face, and what it means for the future of learning. According to (Baillifard et al., 2023).

shows that using AI tutors into educational programs can effectively improve academic achievement by simulating human learning processes. To improve the learning experience in higher education, researchers have explored innovative ways to support both teaching and learning. Based on (Sajja et al., 2024) This study introduces an innovative framework for an AI-powered assistant developed to offer customized and adaptive learning support in higher education, with the aim of improving both student engagement and overall satisfaction. As education evolves in the digital age, leveraging advanced technologies has become essential for enhancing learning experiences and outcomes. Based on (Sajja et al., 2023) This study focuses on creating an advanced learning analytics tool that utilizes OpenAI's GPT-4 model to measure student engagement and assess teaching strategies. The goal is to improve educational outcomes by enabling personalized interventions.

Artificial Intelligence (AI) can be integrated into English as a Foreign Language (EFL) teaching to enhance the effectiveness of teaching methods and support the development of students' language skills, English as a Foreign Language Teaching have a big Impact for student to enhance their speaking skills, Based on (Wale & Bishaw, 2020). This study explores how this teaching method approach fosters skills such as interpretation, analysis, evaluation, inference, explanation, and self-regulation, ultimately improving students' reasoning and decision-making abilities in their writing.

There is a growing amount of study in English language instruction, focusing on how teachers and students interpret AI (Xie et al., 2024). In this globalized age, the quick development of technology especially Artificial Intelligence (AI) has affected teaching methods, and a wide range of technologies have been employed to improve EFL students' speaking skill.

Using AI in language learning makes it easier for students to improve their speaking skills. AI tools provide personalized feedback, real-time corrections, and practice conversations that feel like real-life interactions. These tools can analyze speech, pinpoint weaknesses, and offer targeted exercises so the students can enhance their speaking skills, Speaking skills are crucial because they are

fundamental to effective communication. In both personal and professional contexts, the ability to articulate ideas clearly and confidently is vital for building relationships, conveying information, and influencing others speaking is one of the most essential communication skills globally. It allows individuals to share important information with others effectively (Crisianita & Mandasari, 2022). According to (Arini & Wahyudin, 2022) spoken skill and communication may play a very vital role to the students as their future profession might rely heavily on the use of speaking ability.

A study by (Yan et al., 2024) examined the impact of situated learning on ELLs' speaking performance. Situated learning involves immersing learners in real-world contexts, allowing them to apply language skills in authentic situations. (Suryadi & Erlangga, 2024) indicated that the effectiveness of these learning media on speaking outcomes was contingent upon the student's mastery of discourse markers. AI plays a significant role in enhancing speaking skill through interactive language learning tools and real-time speech recognition technology.

Speaking is a key part of learning a language, it's how we connect with others, share ideas, and build relationships. It allows us to express ourselves, share what's on our minds, and interact with the world around us. Whether in everyday conversations or at work, being able to speak well is crucial for clear and meaningful communication. Recently, previous researchers have been exploring different ways to help language learners improve their speaking skills. For example, (Sosas, 2021) this researcher looked at how using technology in teaching can impact students learning English. The results showed that adding tech tools to the learning process can make a real difference in helping learners become more confident and effective speakers.

Another study by (Dennis, 2024) investigated the impact of such technology on English as a Foreign Language (EFL) learners, revealing notable improvements in their speaking skill. Additionally, AI-powered learning activities have been successfully combined with genre-based teaching methods to make speaking practice more effective. For example, studies involving students in the hospitality industry showed that using AI tools helps learners dive deeper into the language, practice speaking in real-world situations, and get instant feedback. This not only makes the learning process more engaging but also boosts their overall speaking skills and confidence.

Acquiring proficient speaking skills in a foreign language is a complex process fraught with numerous challenges. Through classroom observations and learner feedback, several critical barriers have been identified that hinder students' ability to communicate effectively. These challenges, rooted in linguistic, psychological, and pedagogical factors.

Learning to speak a foreign language fluently comes with its fair share of challenges, as anyone who's tried can attest. One of the biggest hurdles is getting pronunciation right—mispronouncing words can lead to misunderstandings and

make learners feel self-conscious, often causing them to hold back in conversations. On top of that, having a limited vocabulary makes it hard to express ideas clearly, especially when dealing with words that have multiple meanings. This can leave learners feeling stuck and unable to fully engage in discussions. Then there's the issue of anxiety—many students feel nervous about making mistakes or speaking in front of others, which can make them hesitant to participate at all. To make matters worse, traditional classrooms often don't give students enough chances to practice speaking, as teachers tend to do most of the talking. And let's not forget grammar—struggling to put together accurate sentences can make speech feel choppy and hard to follow. Tackling these challenges means creating a supportive environment where learners can practice freely, build confidence, and gradually improve their speaking skills.

These challenges highlight the multifaceted nature of developing speaking skills in a foreign language. Addressing these issues requires a holistic approach that combines targeted pronunciation training, vocabulary expansion, confidence-building activities, increased speaking practice opportunities, and focused grammar instruction. By understanding and addressing these barriers, educators can create more effective strategies to support learners in achieving speaking skill. To address the challenges of developing English speaking skill among high school students, integrating the ELSA (English Language Speech Assistant) AI mobile app into the learning process offers a promising solution.

Artificial Intelligence is increasingly being integrated into language learning applications to enhance speaking skills. For instance, AI-powered platforms like ELSA Speak provide personalized feedback on pronunciation, helping users improve their spoken English. Similarly, Poised offers real-time suggestions to boost communication effectiveness during calls. These tools utilize advanced algorithms to analyze speech patterns and offer tailored guidance, making language learning more accessible and efficient.

In today's rapidly evolving educational landscape, the integration of artificial intelligence (AI) into English Language Teaching (ELT) has become increasingly significant. AI-powered mobile applications, such as ELSA Speak, are at the forefront of this transformation, AI tools offering innovative solutions to enhance language learning experiences. According to (Anggraini, 2022) ELSA Speak provides personalized pronunciation training, enabling learners to receive immediate feedback and tailored exercises. The integration of AI tools like ELSA Speak into English Language Teaching (ELT) is becoming increasingly important due to their potential to transform traditional teaching methods. By providing real-time feedback and personalized learning experiences, these applications enable learners to practice independently, addressing gaps that conventional classroom settings may not fully cover (Crompton et al., 2024). The widespread availability of AI-driven mobile apps is breaking down barriers in language education, extending high-quality learning opportunities to individuals regardless of their location or economic status. This broad accessibility is vital in today's interconnected world,

where skill in English can unlock numerous personal and professional opportunities. (Neenaz et al., 2023)

Theoretically, the integration of applications like ELSA Speak is firmly grounded in the frameworks of Computer-Assisted Language Learning (CALL) and Mobile-Assisted Language Learning (MALL). MALL provides learners with the flexibility to practice language skills anytime and anywhere, which is crucial for speaking proficiency that requires continuous repetition. Within this framework, ELSA Speak utilizes advanced AI speech recognition to provide immediate, micro-level feedback on phonemic accuracy. This instant diagnostic feedback allows students to recognize and correct pronunciation errors in real-time. Furthermore, practicing conversations with an AI rather than a human teacher significantly lowers students' speaking anxiety. By reducing this affective filter, students feel safer to make mistakes, which naturally builds their confidence and ultimately leads to better speech fluency.

Even with the encouraging findings from previous research, there are still a number of obstacles to overcome before situated learning and learning media may be successfully incorporated into teaching methods. Integrating technology into language learning has transformed traditional educational methods, providing innovative tools to enhance speaking skills. Among these, the ELSA Speak application stands out as a leading AI-driven platform designed to improve English pronunciation and speaking skill. (Elsani et al., 2023) shown that the application's AI quick feedback function promoted autonomous learning while greatly improving students' speaking abilities. According to (Ngoc & Thanh, 2023) The researcher examined how non-specialized students benefit from using ELSA Speak to improve their pronunciation, highlighting both the advantages and the challenges they face, while offering useful insights into how the app can be applied in real learning situations.

Several studies have investigated the effectiveness of the ELSA Speak application in enhancing English speaking skills. Previous research conducted by (Adawiah & Muliati, 2024) This research examines the effect of the ELSA Speak application on students' English pronunciation development. According to test results, the application improves pupils' speaking abilities. Based on (Aswaty & Indari, 2022) This study explores the positive effect of using the ELSA Speak application on students' speaking ability. The research found that the application effectively enhances students' speaking skills. Another similar research was by (Hasbi & Nursaputri, 2024) The study concluded that the use of the ELSA Speak application had a substantial positive effect on students' English-speaking skill.

While a growing body of recent international studies from 2024 to 2026 (e.g., Dennis, 2024; Xie et al., 2024) has documented the benefits of AI in language learning, many of these studies tend to focus heavily on higher education, specialized training, or independent self-study contexts. Existing literature often treats AI tools as supplementary out-of-class activities rather than core

pedagogical instruments. Consequently, there is still limited empirical evidence on how these applications function when directly embedded into standard classroom instruction at the senior high school level.

Therefore, this study addresses this specific gap. The novelty of this research lies not only in its setting a rural Indonesian high school but primarily in its methodological approach of integrating ELSA Speak as an active, guided component of regular classroom activities. By doing so, this study aims to comprehensively evaluate the effectiveness of the ELSA Speak application in enhancing students' speaking skills, specifically focusing on pronunciation accuracy, fluency, and student confidence, while also examining its practical role in everyday language acquisition.

Literature Review

English Speaking Skill

Mastering English speaking skills is crucial for effective communication, as it involves several important elements. Pronunciation plays a vital role, as it ensures clarity and helps listeners understand the speaker correctly. Grammar is equally essential, as it provides the foundation for constructing accurate and meaningful sentences. A strong vocabulary allows speakers to choose the right words for different situations, enhancing their ability to express ideas clearly. Fluency is another key aspect, enabling individuals to speak smoothly without frequent pauses or interruptions.

Lastly, comprehension is critical, as it allows speakers to understand what others are saying and respond in a relevant and appropriate manner. Together, these components form the backbone of proficient English communication. Building these skills demands regular practice and immersion in the language. Actively engaging in conversations, listening to native speakers, and taking part in speaking exercises can significantly boost one's proficiency.

Furthermore, receiving constructive feedback plays a vital role in identifying areas for improvement and refining one's abilities. The development of speaking skills requires consistent practice, exposure to authentic language use, and feedback that targets pronunciation, grammar, vocabulary, and fluency. (Adem & Berkessa, 2022) (Eslit & Valderama, 2023) (Normawati et al., 2023) Effective speaking skills enable individuals to convey information verbally in a way that listeners can understand

ICT In Language Teaching

Information and Communication Technology (ICT) has become a game-changer in language teaching, bringing digital tools like computers, the internet, and multimedia applications into the classroom to make learning more effective and engaging. One of the biggest perks of using ICT is that it opens the door to authentic, real-world materials think news articles, podcasts, and videos that help learners not only understand the language better but also connect with the culture

behind it. Digital platforms also make learning interactive, offering exercises and instant feedback that keep students engaged and let them progress at their own pace. Plus, ICT breaks down geographical barriers, allowing learners to collaborate and communicate with peers or native speakers from around the world, which is a huge boost for speaking and listening skills. For teachers, it's a treasure trove of resources, making it easier to design creative, tailored lessons that meet the diverse needs of every student. In short, ICT makes language learning more dynamic, accessible, and fun for everyone involved. (Saud, 2023) (Sim & Ismail, 2023) (Canese et al., 2023)

AI in ELT

The integration of AI into English Language Teaching (ELT) brings a host of exciting benefits that can transform how students learn. For starters, AI tools like ChatGPT offer personalized feedback, pinpointing each learner's strengths and areas for improvement, which helps them grow in a more targeted way. These tools also empower students to take charge of their learning journey by providing resources and support they can access anytime, fostering a sense of independence and self-direction. On top of that, AI makes learning more engaging and fun interactive applications create lively, dynamic experiences that keep students hooked and motivated to dive deeper into the material. Perhaps most importantly, AI helps learners sharpen their language skills by simulating real-life conversations and offering instant feedback, making it easier to build fluency and comprehension. (Al-Khresheh, 2024) (Tiwari, 2024) (Wei, 2023)

ELSA Ai Mobile App Integration

The ELSA Speak AI mobile application has proven to be a game-changer in English language learning, offering a range of benefits that make it a standout tool. For one, it's been shown to significantly boost students' speaking skills, helping them become more fluent and accurate in their pronunciation. But it's not just about the results students genuinely enjoy using the app, finding it both effective and engaging, which makes the learning process feel less like a chore and more like an exciting challenge. What's more, ELSA Speak encourages learners to take charge of their own progress by providing instant AI feedback, allowing them to self-assess and work at their own pace. This sense of independence can be incredibly empowering. All in all, ELSA Speak has emerged as a powerful ally in modern language education, not only helping students sharpen their speaking skills but also inspiring them to take ownership of their learning journey. (Nguyen & Tuyen, 2024) (Tran & Vu, 2024) (Elsani et al., 2023a)

Previous Study

According to (Hasbi & Nursaputri, 2024) This study evaluates the effectiveness of the ELSA Speak app in improving the English-speaking skills of

eighth-grade students at an Indonesian Islamic Junior High School. Using Classroom Action Research (CAR) as the methodology, the research involved 15 students and one English teacher. The results revealed that the app significantly enhanced students' speaking abilities, particularly in pronunciation and fluency. The study concludes that ELSA Speak is a highly effective tool for language educators seeking to boost students' oral proficiency.

(Syabina & Rahman Hz, 2024) This study explores high school students' perceptions of using the ELSA Speak app as a tool for practicing English speaking skills this study explores high school students' perceptions of using the ELSA Speak app as a tool for practicing English speaking skills. Conducted at a high school in North Sumatra, Indonesia, the research involved 30 female students. The findings indicate that students found the app engaging and effective, particularly for improving pronunciation and speaking abilities. The study suggests that integrating ELSA Speak into the curriculum can be a valuable way to support students in developing their oral proficiency

Based on (Khadijah et al., 2023) This study dives into how junior high school students feel about using the ELSA Speak app to learn English by gathering data from 15 students through questionnaires and interviews, the research found that students had a positive outlook on the app. Many reported noticeable improvements in their pronunciation and a boost in their confidence when speaking English. The study highlights that ELSA Speak is a helpful and effective addition to traditional learning methods, making it a great tool for students looking to sharpen their speaking skills in a fun and interactive way.

this research is different from previous studies in a number of significant respects. Prior research has examined several aspect of ELSA Speak in terms of participants and focus, but it hasn't properly assessed how it affects high school students' speaking skills. (Hasbi & Nursaputri, 2024) investigated its impact on eighth-grade junior high school students, assessing the extent of improvement in their speaking skills. Meanwhile (Syabina & Rahman Hz, 2024) explored high school students' perceptions of ELSA Speak without measuring actual speaking proficiency. Additionally, (Khadijah et al., 2023) examined students' willingness to engage in speaking practice using the application but did not empirically assess their skill development. According to that difference my research specifically focuses on high school students and aims to demonstrate a measurable improvement in their speaking proficiency rather than focusing primarily on perceptions or motivation.

In terms of methodology, prior research has employed various approaches. (Hasbi & Nursaputri, 2024) utilized Classroom Action Research (CAR) with pre-test and post-test assessments to evaluate speaking skill development. In contrast, (Syabina & Rahman Hz, 2024) adopted a qualitative approach involving interviews and questionnaires to explore students' perspectives on ELSA Speak. Meanwhile, (Khadijah et al., 2023) employed a descriptive quantitative method focusing on survey-based student perceptions of the application. My study will integrate both

quantitative and qualitative methodologies, employing a quasi-experimental design with pre-test and post-test assessments to measure tangible improvements in speaking proficiency, while also analyzing students' perceptions of ELSA AI's effectiveness.

Regarding the scope of the study, previous research has emphasized different aspects of speaking development. (Hasbi & Nursaputri, 2024) primarily focused on pronunciation and fluency. (Syabina & Rahman Hz, 2024) examined student engagement and motivation in using the application but did not assess its direct impact on speaking skills. Similarly, (Khadijah et al., 2023) explored students' willingness to speak but did not provide quantitative data on skill improvement. In contrast, my research aims to comprehensively evaluate various dimensions of speaking proficiency, including fluency, pronunciation accuracy, confidence, and overall engagement in the language-learning process.

Based on previous studies, the researcher propose the following hypotheses: H1 (Alternative Hypothesis): The integration of the ELSA AI Mobile Application significantly enhances English speaking skills in high school students, as evidenced by improvements in pronunciation accuracy, fluency, and confidence levels. H0 (Null Hypothesis): The use of ELSA AI does not result in a significant improvement in students' English-speaking skills compared to traditional speaking exercises.

The reason for selecting this The hypothesis is based on previous research. (Hasbi & Nursaputri, 2024) reported a 46.66% increase in speaking proficiency after using ELSA Speak, demonstrating the application's effectiveness. Additionally, while (Syabina & Rahman Hz, 2024) indicated positive student perceptions, their study did not empirically assess skill development. Similarly, (Khadijah et al., 2023) found that students felt more motivated and challenged to practice speaking, but their research lacked concrete measurements of improvement. Given these gaps, this research seek to provide empirical evidence on the impact of ELSA AI on high school students' speaking proficiency, addressing the need for quantifiable assessment of its effectiveness in language learning.

2. Method

Research Design:

This study will adopt a quasi-experimental research design (Creswell, 2003). with a pre-test and post-test control group (Dimitrov & Rumrill, 2003) approach to evaluate the effectiveness of the ELSA Speak application in improving English speaking skills. (Creswell, 2003) also states that during an experiment, researchers collect data by observing or measuring participants at specific points, such as before the procedure begins (pre-test), after it concludes (post-test), or at both stages. These measurements will help evaluate the impact of the experiment or intervention. The design will allow for a comparison between an experimental group and control group.

Instrument Research:

The instrument to collect to data from this research is:

Pre-Test and Post-Test: Standardized assessments were administered to evaluate students' speaking skills, emphasizing pronunciation, grammar, vocabulary, fluency, and comprehension. The assessments will be designed in accordance with the Common European Framework of Reference for Languages (CEFR), an international standard for describing language ability. This alignment will ensure that the tests are consistent and valid, providing a reliable measure of students' language skill Rubric Scoring to gathered qualitative insights into students' experiences and result regarding their use of the ELSA Speak application.

Population and Sample:

This research involved 50 twelfth-grade students from SMAN 01 Luwu, aged between 16 and 18 years. The participants were selected using a purposive sampling technique. The primary criteria for selection were that the students had received formal English instruction for at least two years at the high school level and demonstrated an average level of English speaking proficiency based on their previous semester grades. The students were then divided into two groups: an experimental group (25 students) that utilized the ELSA Speak application, and a control group (25 students) that received conventional instruction. Prior to data collection, ethical considerations were strictly observed; all participants and their parents or guardians were provided with a brief explanation of the study and signed an informed consent form.

Data Collection:

The main tools to be used in this study will be using pre-tests and post-tests, specifically designed to evaluate speaking skill. These assessments will measure key aspects such as pronunciation, grammar, vocabulary, fluency, and comprehension, 3.1. Rubric Scoring adapted from *"English Language Learning Assessment Rubric"* The rubric ensures a comprehensive evaluation of speaking proficiency across key indicators: pronunciation, fluency, vocabulary, grammar, and comprehension.

Aspect	Score 1 (Very Poor)	Score 2 (Poor)	Score 3 (Average)	Score 4 (Good)	Score 5 (Excellent)
Pronunciation	Frequent mispronunciations, hard to understand.	Some pronunciation errors, occasionally unclear.	Pronunciation is mostly correct, few errors.	Clear pronunciation with minor mistakes.	Excellent pronunciation, very clear and natural
Fluency	Hesitant speech, long	Some hesitation,	Fairly fluent with	Fluent with rare pauses,	Very smooth, natural flow,

	pauses, difficult to maintain flow.	uneven flow of speech.	occasional pauses.	good control of speech flow.	confident and highly fluent.
Vocabulary	Limited vocabulary, often repetitive or incorrect usage.	Basic vocabulary, some inappropriate word choices.	Adequate vocabulary, suitable for most situations.	Wide range of vocabulary with accurate usage.	Rich, varied vocabulary with precise and sophisticated usage.
Grammar	Frequent grammatical errors, sentences often incorrect.	Several grammatical mistakes, affect understanding.	Some minor errors but generally correct structures.	Mostly accurate grammar with only slight mistakes.	Grammatically correct, complex structures used effectively.
Comprehension	Poor understanding, unable to respond appropriately.	Limited comprehension, needs questions repeated or clarified.	Understands main ideas, responds adequately.	Good understanding, responds correctly with minimal issues.	Full comprehension, responds accurately and thoughtfully.
Total Score : 25 Points (Maximum)					

This rubric is adapted from the *"English Language Learning Assessment Rubric"* (Syahidah & Umasugi, 2021). The rubric assesses five key aspects of speaking skills: Pronunciation, Grammar, Vocabulary, Fluency, and Comprehension. Each aspect is scored from 1 to 5, with clear criteria descriptions for each score level. The use of this rubric allows for a more objective and structured assessment of students' speaking abilities.

The research intervention was conducted over seven meetings, with each session lasting approximately 90 minutes. In the experimental class, students spent around 30 to 45 minutes using the ELSA Speak app to practice specific pronunciation and fluency exercises tailored to the day's topic, followed by communicative role-play activities. To reinforce their learning, students were also assigned a daily 15-minute speaking practice on the app as homework.

To guarantee the validity and reliability of the assessment, the speaking rubric was adapted from standard CEFR guidelines and reviewed by an English teaching expert. Furthermore, to minimize subjectivity and bias in scoring, the students' speaking performances in both the pre-test and post-test were evaluated by two independent assessors: the researcher and a certified English teacher at the school. The scores from both assessors were then compared to establish inter-rater

reliability before calculating the final mean scores.

Component	Description
Objective	Assess students' speaking skill before and after using the ELSA Speak application, focusing on pronunciation, fluency, vocabulary, grammar, and comprehension.
Instructions	- Students select a topic from a provided list. - After selection, students have 2-3 minutes to prepare. - Students speak for 3-5 minutes on the chosen topic. - Performance is recorded for further analysis.
Sample Topics	- A memorable holiday experience. - Personal hobbies and interests. - Description of a family member or close friend. - Opinions on technology in education. - Future aspirations and plans.
Assessment Criteria	- Pronunciation: Accuracy and clarity in word pronunciation. - Fluency: Ability to speak smoothly without excessive pauses or repetitions. - Vocabulary: Use of a diverse and context-appropriate vocabulary. - Grammar: Correct sentence structure and appropriate tense usage. - Comprehension: Ability to convey ideas clearly and coherently.
Scoring Scale	Each criterion is rated on a scale of 1-5: - 1-5 : Very Poor - 6-10 : Poor - 11-15 : Average - 16-20 : Good - 20-25 : Excellent
Procedure	- Pre-Test: Conducted before the intervention with the ELSA Speak application; students perform the test as per the instructions above. - Post-Test: Conducted after a designated period of using the ELSA Speak application (e.g., after 7 meeting) the procedure mirrors the pre-test.

3.2. Pre-Test & Pos-Test structure

Data Analysis :

The collected data were analyzed using statistical software to evaluate the impact of the ELSA Speak application. Initially, a Shapiro-Wilk test was conducted to check the normality of the data distribution, and Levene's test was used to verify homogeneity of variance. Because the normality test results indicated that the post-test data for the experimental group was not normally distributed, the researcher utilized a non-parametric approach. Specifically, the Mann-Whitney U test was employed instead of an independent T-test to compare the final speaking performance between the experimental and control groups.

3. Result

This study aims to evaluate the effectiveness of the "ELSA AI" application in improving students' speaking skills. Researchers compared the results of the experimental class by using the "ELSA AI" application and the control group using traditional learning methods. By using the Independent Sample T-test or difference test. The researcher used an independent sample T-test because the two subjects tested were from different classes and different people. Based on the SPSS formula, the Independent Sample T-test is the most suitable for the research conducted. The following are the results of data processing using the Independent sample T-test SPSS application.

Classification	Range of Scores	Experiment		Control Group	
		N	%	N	%
Excellent	21-25	2	8.00	1	4.00
Good	16-20	7	28.00	4	16.00
Average	11-15	10	40.00	13	52.00
Poor	6-10	5	20.00	5	20.00
Very Poor	1-5	1	4.00	2	8.00
Amount		25	100	25	100

3.3. table of Frequency and percentage of students pre-test of experimental and control group

From the data above, it can be seen that most students in both groups were placed in the "Average" and "Poor" categories. In the experimental group, 40% of the students were classified as "Average", while 20% were in the "Poor" category. Meanwhile, the control group had over half of the students (52%) in the "Average" level, with a slightly higher number in the "Very Poor" category compared to the experimental group.

There were also a few students in both groups who scored higher. In the experimental group, 7 students (28%) were at the "Good" level, and 2 students (8%) even reached "Very Good." The control group, on the other hand, had only 4 students (16%) in the "Good" category and 1 student (4%) in "Very Good."

These pre-test results show that both groups started at a relatively similar level, though the experimental group had slightly more students in the higher categories. However, the difference was not too significant, and it reflects a normal variation in student ability within real classroom conditions. Overall, the pre-test provides a average baseline to compare with the post-test results and helps to measure how effective the ELSA Speak application was in improving students' speaking performance.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	control class	14.72	25	3.21	0.64
	experiment class	13.84	25	3.67	0.73

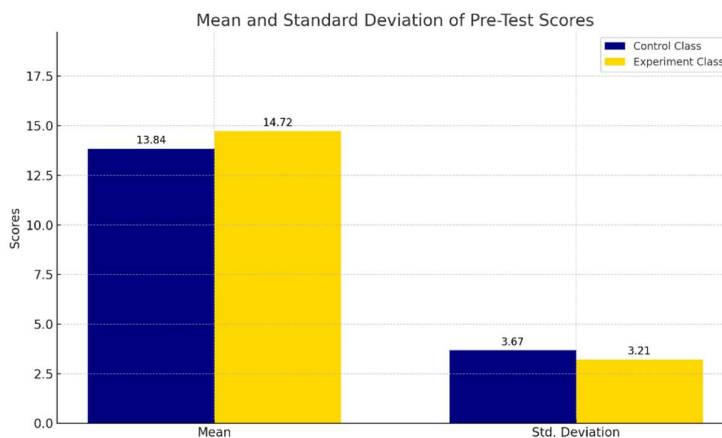
3.4. table of mean and std. deviation of students pretest of experiment and control group

To find out how similar both groups were before the treatment, the researcher analyzed their pre-test scores using descriptive statistics. This included calculating the mean, standard deviation, and standard error.

Based on the table above, the average (mean) score of the experimental group was 14.72, while the control group had an average of 13.84. These scores show that, on average, students in both groups were in the "Average" range (11–15 on the 25-point scale), with the experimental group performing just slightly better.

The standard deviation for the experimental group was 3.21, meaning their scores were moderately spread out around the mean. The control group had a standard deviation of 3.67, which indicates a bit more variation in their scores.

Even though the mean score for the experimental group was slightly higher, the difference is not statistically large. These results suggest that the two groups had relatively comparable speaking abilities before the intervention. This balance is important because it means that any differences found in the post-test are more likely to be the result of the treatment (in this case, the use of the ELSA Speak app), not because one group started out significantly stronger than the other.



1.6. Bar chart of mean and std. deviation of students pretest of experiment and control group

As shown in the chart, the experimental class had a slightly higher average score of 14.72, while the control class had a mean score of 13.84. Although the experimental group performed a bit better, the difference between the two groups was not very large. This indicates that both classes were generally on the same level of speaking proficiency at the beginning of the study. When the researcher looked at the standard deviation, the control group had a value of 3.67, compared to 3.21 in the experimental group. This suggests that the scores in the control group were a bit more spread out, meaning there was slightly more variation among individual students. In contrast, the experimental group's scores were more consistent.

Overall, the chart supports the idea that both groups started with relatively similar speaking abilities, and any major difference in the post-test performance is more likely a result of the treatment, not because one group was stronger from the beginning.

Classification	Range of Scores	Experiment		Control Group	
		N	%	N	%
Very Good	21-25	12	48.00	3	12.00
Good	16-20	8	32.00	6	24.00
Average	11-15	3	12.00	11	44.00
Poor	6-10	2	8.00	4	16.00
Very Poor	1-5	0	0.00	1	4.00
Amount		25	100	25	100

3.5. Table of Frequency and percentage of students post -test of experimental and control group

After being given treatment using the ELSA Speak application, students in the experimental group showed a noticeable improvement in their speaking abilities. The post-test results reveal how students' performance changed following the intervention and how it compares with the control group, which did not receive the same treatment.

As the table shows, nearly half of the students in the experimental group (48%) reached the *Very Good* category after being given treatment using ELSA, while another 32% achieved a *Good* score. This means that 80% of the students in this group performed at a high level on the post-test, a strong indication of the app's effectiveness in helping improve their speaking skills.

On the other hand, the control group did not experience the same level of progress. Most of their students remained in the *Average* category (44%), and only a small portion (12%) reached the *Very Good* level. A few students in the control group even continued to score in the *Poor* or *Very Poor* categories.

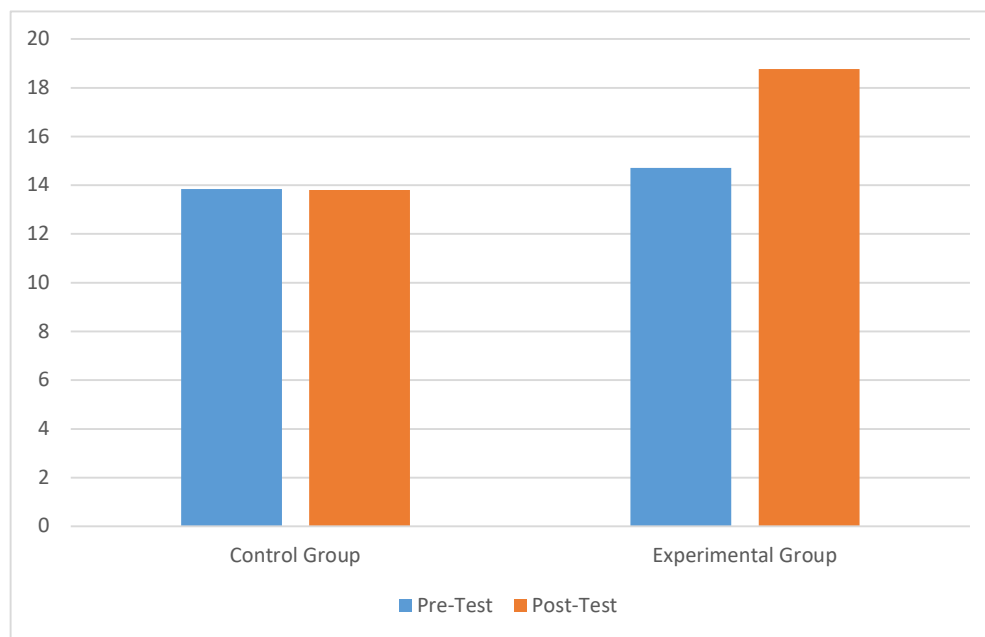
These results clearly suggest that the ELSA Speak application played a significant role in helping students improve their English speaking ability,

especially when compared to traditional instruction without the aid of AI-based learning tools.

Group	N	Mean Score	Std. Deviation	Std. Deviation Mean
Experimental	25	18.76	4.48	0.90
Control	25	13.80	4.73	0.95

3.6. Descriptive Statistics of Students' Post-Test Scores in Experimental and Control Groups

The table above shows the average post-test scores and the spread of results in both the control and experimental groups. Students in the experimental class, who learned with the help of the ELSA Speak application, had an average score of 18.76, while those in the control group had a lower average of 13.80. The data also shows that the control group's scores were slightly more spread out. Overall, the results indicate that students who used ELSA Speak tended to perform better in their speaking tests compared to those who followed the usual learning method.



3.6.2 Comparison of Pre-Test and Post-Test Mean Scores.

As visually presented in the bar chart above, both the experimental and control groups started at a relatively comparable level during the pre-test, with mean scores of 14.72 and 13.84, respectively. However, a noticeable divergence appears in the post-test results. Students in the experimental group, who engaged with the ELSA Speak app, demonstrated a substantial increase, reaching a mean score of 18.76. In contrast, the control group showed minimal change, with a final mean score of 13.80.

This clear visual contrast highlights the distinct advantage of integrating AI-

assisted tools into regular instruction for enhancing students' speaking proficiency.

Tests of Normality							
	learning model	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistics	df	Sig.
Student Learning Outcomes	control class	0.200	25	0.234	0.949	25	0.243
	experimental class	0.254	25	0.065	0.850	25	0.002
a. Lilliefors Significance Correction							

3.7. Normality Test Table

Based on the results, we can see that the control group's post-test data appears to be normally distributed. Both the Kolmogorov-Smirnov (Sig. = 0.234) and Shapiro-Wilk (Sig. = 0.243) p-values are above the threshold of 0.05, meaning the normality assumption is met for this group.

In contrast, the experimental group shows a different pattern. While the Kolmogorov-Smirnov test result is marginally above 0.05 (Sig. = 0.065), the Shapiro-Wilk test is significant (Sig. = 0.002). This suggests that the data for the experimental group deviates from normality, according to the more sensitive Shapiro-Wilk test.

Because one of the groups (experimental) does not meet the normality assumption, the researcher consider using a non-parametric test (like the Mann-Whitney U test) instead of a t-test when comparing the two groups' post-test results.

Mann-Whitney U test			
Group	N	Mean Rank	Sum of Ranks
Control Class	25	18.20	455.00
Experimental Class	25	32.80	820.00
Total	50		

3.8. non-parametric Test Table

Test Statistics	Post-Test Score
Mann-Whitney U	483.300
Willcoxcon W	455.000
Z	-3.258
Asymp. Sig. (2-tailed)	0.001

3.9. non-parametric Statistic Test Table

Since the assumption of normality was not fully met, particularly in the experimental group, the researcher utilized the Mann-Whitney U test to compare the post-test performance between the two groups. Based on the analysis, the U value was 483.000, and the Z-score was -3.258, resulting in a significance level (Asymp. Sig. 2-tailed) of 0.001. Because this p-value is significantly lower than the

0.05 threshold, it can be concluded that there is a highly significant difference in speaking scores between the experimental and control groups.

To determine the magnitude of this treatment effect, an effect size (r) was calculated using the formula $r = Z / \sqrt{N}$. With a Z-score of 3.258 and a total sample size (N) of 50, the resulting effect size is $r = 0.46$. In educational research, an effect size of 0.46 indicates a medium-to-large effect. This confirms that the integration of the ELSA Speak application not only generated a statistically significant difference but also had a substantial practical impact on the students' overall speaking proficiency compared to conventional teaching methods.

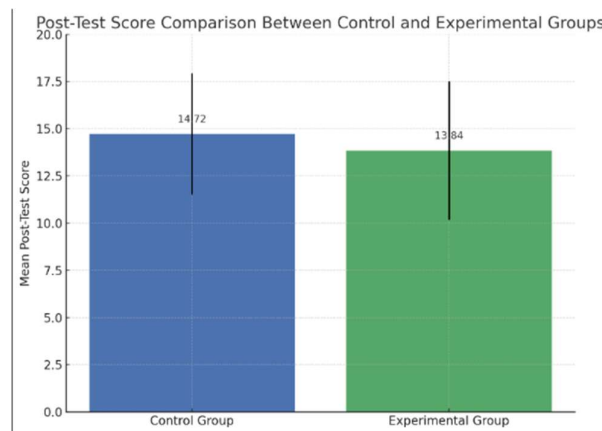
Test of Homogeneity of Variance					
		Levene Statistics	df1	df2	Sig.
Post-Test speaking scores	Based on Mean	0.506	1	28	0.483
	Based on Median	0.445	1	28	0.510
	Based on Median and with adjusted df	0.445	1	25.813	0.511
	Based on trimmed mean	0.516	1	28	0.478

3.10. Homogeneous Test Table

Based on the Levene's test results, all the significance values are greater than 0.05. This indicates that there's no meaningful difference in the variance between the experimental and control groups. In simple terms, both groups had similar levels of consistency in their scores. Because of that, it's safe to move forward with statistical comparisons like the t-test or Mann-Whitney U test, since the data meets the necessary assumptions for fair analysis.

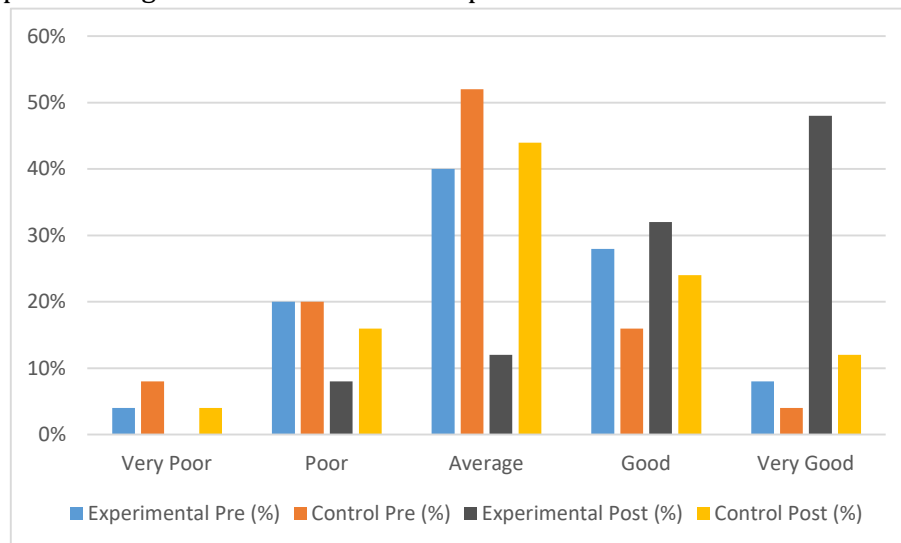
Independent Samples T-test	
Statistic	Value
t-value	0.902
Degrees of Freedom	47.160
Sig. (2-tailed)	0.371
Mean Difference	0.880
Standard Error	0.980
95% Confidence Interval (Lower)	-1.080
95% Confidence Interval (Upper)	2.40

1.13. Independent Sample T-test Table



3.11. Independent Sample T-test Chart Bar

The Independent Sample T-test table and chart above actually illustrate the comparison of the pre-test results, not the post-test. As shown in the statistical output, the mean difference between the two groups initially was only 0.880, with a p-value of 0.371 (which is strictly greater than 0.05). This confirms that before any treatment was applied, there was no statistically significant difference in speaking skills between the experimental and control groups. Both classes started at an equal baseline, ensuring that any subsequent improvements observed in the post-test were a direct result of the ELSA Speak application intervention rather than pre-existing differences in students' proficiencies.



3.12. Percentage of Student score per Classification

The comparison between the pre-test and post-test results shows a clear shift in students' speaking performance, especially in the experimental group that used the ELSA Speak app during the treatment period. Before the treatment, most students in both groups were clustered around the "Average" and "Poor" categories.

In the experimental class, 40% were in the "Average" group, followed by 20% in "Poor", and only a few students (8%) scored in the "Very Good" range. The control group was quite similar, with 52% in "Average" and 20% in "Poor", and just 4% reaching "Very Good." This indicates that both groups started with relatively equal speaking abilities.

However, after the treatment, the distribution in the experimental group shifted significantly. Nearly half of the students (48%) scored "Very Good," and 32% were in the "Good" category. Only a small number remained in "Average" or below. This suggests that students who practiced using the ELSA app improved greatly in their speaking skills.

In contrast, the control group didn't show the same level of improvement. While there was a small increase in the "Very Good" category (up to 12%), the majority still remained in "Average" (44%) and "Poor" (16%). This shows that without the additional support provided by the app, students made less progress. Overall, the shift in score distribution strongly supports the effectiveness of the treatment. Students in the experimental group not only moved up in performance categories but also outperformed the control group by a wide margin in the post-test.

While the overall speaking scores highlight the success of the intervention, a closer examination of the individual speaking components reveals specific areas where the ELSA Speak app was most beneficial. Based on the rubric assessments, students in the experimental group demonstrated the most remarkable improvements in **pronunciation** and **fluency**. The app's AI speech recognition effectively corrected micro-level phonetic errors, allowing students to produce clearer and more accurate sounds. Furthermore, the repetitive and interactive nature of the application helped students reduce hesitant pauses, leading to smoother speech delivery. While vocabulary and grammar also showed positive trends, the most distinct transformation was observed in students' speaking confidence and pronunciation clarity, which are often the most challenging barriers in standard classroom settings.

Synthesis Of Findings

In summary, the statistical data and descriptive analyses consistently answer the research objective: the integration of the ELSA Speak app effectively enhances high school students' English speaking skills. The pre-test data confirmed that both groups started at an equal level. However, after the intervention, the experimental group experienced a significant surge in their speaking proficiency, supported by a medium-to-large effect size ($r = 0.46$) and a highly significant p-value (0.001). The transition of the majority of experimental students into the 'Very Good' and 'Good' categories provides strong empirical evidence that AI-assisted language learning offers a major advantage over traditional instructional methods, particularly in fostering pronunciation accuracy and communicative fluency."

4. Discussion

The current research confirms that integrating the ELSA Speak application into standard classroom activities significantly enhances high school students' English speaking skills, particularly in pronunciation and fluency. Rather than merely repeating the statistical success outlined in the Results section, it is crucial to understand why this AI-assisted intervention was effective from a theoretical standpoint.

The improvements can be primarily understood through the framework of Self-Determination Theory (SDT) and Computer-Assisted Language Learning (CALL). Within the CALL environment, ELSA Speak's AI speech recognition provides instantaneous, micro-level feedback that is practically impossible for a single teacher to provide to every student in a large class. Furthermore, the app actively fulfills the three psychological needs outlined in SDT: autonomy, competence, and relatedness. The application fosters autonomy by allowing students to control the pace and frequency of their practice in a private, low-anxiety environment. As they receive immediate corrective feedback and earn higher scores, their sense of competence grows. This newly acquired confidence indirectly supports relatedness, as students become more willing to participate in classroom conversations and interact with their peers without the fear of mispronunciation. These theoretical mechanisms explain the empirical successes observed in recent local studies (e.g., Hasma et al., 2022; Claudia Putri, 2024; Gusrianto & Iswahyuni, 2024), which also noted that real-time AI guidance significantly improves phonetic accuracy.

However, to provide a balanced interpretation, it is essential to consider alternative factors that may have influenced these positive outcomes. The sudden surge in students' performance could partially be attributed to the "novelty effect"—a phenomenon where learners experience a temporary spike in engagement simply because they are interacting with a new, exciting technological tool. Additionally, the experimental group engaged in daily speaking practice via the app as homework. Therefore, the increased overall language exposure and time-on-task might be just as responsible for the improvements as the AI technology itself. This perspective resonates with studies reporting mixed outcomes, which argue that while AI tools successfully boost initial interest, maintaining that motivation over a longer period requires continuous teacher intervention, as the novelty eventually wears off.

These insights carry important pedagogical implications for English Language Teaching (ELT). Integrating AI into regular classroom instruction requires more than just downloading an app; it demands teacher readiness and careful curriculum alignment. Educators must be prepared to shift their roles from being the sole language models to acting as facilitators who guide students on how to critically interpret and utilize AI feedback. Furthermore, schools should ensure that the curriculum seamlessly blends AI-assisted independent practice with

collaborative, real-world communicative tasks in the classroom. Ultimately, AI tools like ELSA Speak should serve as a powerful supplement to, rather than a replacement for, human interaction and pedagogical guidance.

5. Conclusion

This study was conducted to find out whether the use of the ELSA Speak application could improve students' English-speaking skills. The research involved two groups: an experimental group that received treatment using ELSA and a control group that continued with conventional learning methods.

From the beginning, both groups showed relatively similar speaking abilities based on the pre-test results. Most students in both classes fell into the average category, with only a few in the higher or lower classifications. This confirmed that the two groups were comparable before treatment began.

After the treatment, there was a clear difference between the two. The experimental group's post-test scores increased significantly, with many students moving into the "Good" and "Very Good" categories. On the other hand, while the control group also showed some improvement, the progress was not as strong. This difference was confirmed through statistical analysis using the Mann-Whitney U test, which showed a significant result in favor of the experimental group.

These findings show that the ELSA Speak app had a positive impact on students' speaking performance, especially in terms of fluency, pronunciation, and confidence. The instant feedback and interactive nature of the app helped students become more aware of their mistakes and encouraged more independent practice outside the classroom.

In conclusion, integrating ELSA Speak into English lessons—especially in speaking-focused activities—can be a valuable tool for improving students' oral communication skills. It supports student engagement, provides useful feedback, and creates a more dynamic learning experience. This research suggests that ELSA is not meant to replace teachers, but it can be used as a powerful supplement to help students become more confident and capable English speakers.

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