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The effect of the Lola Speak application on students' pronunciation skills

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ABSTRACT
The integration of Mobile-assisted Language Learning (MLL) tools, such as the Lola Speak app, offers an innovative pathway to improving English pronunciation skills. This study aims to investigate the effectiveness of Lola Speak in improving students' pronunciation. The rationale for this study lies in the persistent challenges faced by learners in acquiring accurate pronunciation using traditional methods, which often lack interactivity and real-time feedback. This study used a quantitative approach with a quasi-experimental pre-test and post-test design. The sample consisted of 60 high school and university students in Medan, divided into an experimental and a control group. Quantitative data were analyzed using paired t-tests to measure improvement within each group, and independent two-sample t-tests to compare results between groups, with a significance level of 0.05. The results showed a significant improvement in the experimental group's pronunciation ability compared to the control group. These findings suggest that the use of mobile applications such as Lola Speak positively contributes to the improvement of English pronunciation ability. Thus, this application can be an effective supporting resource in English learning in the digital era.

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ABSTRAK
Integrasi alat pembelajaran bahasa berbantuan seluler (Mobile-assisted Language Learning atau MALL), seperti aplikasi Lola Speak, menawarkan jalur inovatif untuk meningkatkan keterampilan pengucapan bahasa Inggris. Penelitian ini bertujuan untuk menyelidiki efektivitas Lola Speak dalam meningkatkan pengucapan siswa. Dasar pemikiran penelitian ini terletak pada tantangan terus-menerus yang dihadapi oleh pelajar dalam memperoleh pengucapan yang akurat menggunakan metode tradisional, yang sering kali kurang interaktivitas dan umpan balik waktu nyata. Penelitian ini menggunakan pendekatan kuantitatif dengan desain kuasi-eksperimental pre-test dan post-test. Sampel terdiri dari 60 siswa di SMA dan universitas di Medan yang dibagi ke dalam kelompok eksperimen dan kontrol. Data kuantitatif dianalisis menggunakan uji t berpasangan untuk mengukur peningkatan dalam setiap kelompok, dan uji t dua sampel independen untuk membandingkan hasil antar kelompok, dengan tingkat signifikansi 0,05. Hasil menunjukkan peningkatan yang signifikan dalam kemampuan pelafalan kelompok eksperimen dibandingkan kelompok kontrol. Temuan ini menunjukkan bahwa penggunaan aplikasi mobile seperti Lola Speak berkontribusi positif terhadap peningkatan kemampuan pelafalan bahasa Inggris. Dengan demikian, aplikasi ini dapat menjadi sumber daya pendukung yang efektif dalam pembelajaran bahasa Inggris di era digital.
Kata Kunci: *Lola Speak; pembelajaran bahasa berbantuan seluler; pelafalan*

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INTRODUCTION

In the Indonesian educational context, English holds the status of a foreign language with increasing strategic importance for economic development and global competitiveness. Recognizing this significance, the Indonesian government has incorporated English as a compulsory subject in the national education system, requiring learners to master four core language skills: listening, speaking, reading, and writing. Among these competencies, speaking skills are considered particularly crucial as they directly involve real-time interaction and meaningful expression in authentic communication contexts (Richards, 2015). However, pronunciation accuracy remains a significant challenge for Indonesian English as a Foreign Language (EFL) learners, as incorrect pronunciation can substantially alter intended messages and lead to communication breakdowns. For instance, mispronouncing the /i:/ sound in "leave" as /ɪ/ results in the word "live," creating semantic confusion for listeners and potentially disrupting communicative effectiveness (Muhayyang et al., 2025). Such pronunciation errors highlight the crucial importance of accurate phonetic production in achieving effective cross-cultural communication.

Empirical evidence demonstrates the widespread nature of pronunciation difficulties among Indonesian EFL students. Research indicates that over 65% of Indonesian EFL learners experience significant challenges in accurately producing English vowel sounds, with the /i:/ and /ɪ/ distinction among the most frequently mispronounced phonemes (Ristati et al., 2024). Additionally, studies have shown that pronunciation errors are prevalent among Indonesian learners when distinguishing between similar vowel sounds, reflecting the phonological interference from their native language system (Pakpahan, 2023). Traditionally, pronunciation instruction has relied on conventional pedagogical approaches such as listen-and-repeat exercises, minimal pair drills, and teacher-led correction, which are widely implemented in Indonesian classroom settings. However, these traditional methods often face limitations, including insufficient individualized attention, limited practice opportunities outside classroom hours, and delayed feedback mechanisms (Fagbohun et al., 2024). Given these pedagogical constraints, technological innovations have emerged as promising solutions to enhance the effectiveness of pronunciation learning.

The widespread adoption of smartphone technology has fundamentally transformed educational practices, particularly in language learning contexts, by providing learners with immediate and convenient access to a diverse range of multimedia resources. Mobile-Assisted Language Learning (MALL) has demonstrated significant potential in enhancing learner engagement, autonomy, and knowledge retention through interactive and personalized learning experiences (Nasim et al., 2022). Research evidence indicates that students utilizing mobile-assisted tools for language learning demonstrate significantly greater improvement in pronunciation, vocabulary, and grammatical competency compared to those using conventional instructional methods alone (Parsa & Anjomshoa, 2021).

Contemporary language learning applications have gained considerable popularity due to their flexibility, interactive features, and user-friendly interfaces that accommodate diverse learning preferences. These applications typically incorporate advanced technological features, such as automatic speech recognition, real-time corrective feedback, and gamified learning elements, which can enhance pronunciation acquisition more effectively than

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traditional instructional approaches (Yuen & Schlote, 2024). Furthermore, AI-based pronunciation tools have shown positive impacts on learners' speaking and listening skill development, offering personalized learning pathways that adapt to individual learner needs (Xiao, 2025). Despite the growing body of research on mobile-assisted language learning, significant gaps remain in the literature regarding pronunciation-specific applications and their effectiveness in improving phonetic accuracy. While numerous studies have examined the general benefits of mobile learning tools for vocabulary and grammar acquisition, fewer investigations have explicitly focused on AI-powered pronunciation applications and their impact on learners' phonetic competency development (Pleines & Kan, 2023).

The novelty of this research lies in its explicit focus on Lola Speak. This pronunciation-specific application employs cutting-edge features including real-time feedback mechanisms, gamified learning experiences, and adaptive learning pathways. These technological features are rarely examined in isolation within existing literature, creating an essential empirical gap that this study addresses. Applications like Lola Speak utilize sophisticated speech recognition technology and artificial intelligence to provide immediate corrective feedback, personalized practice sessions, and flexible learning schedules that accommodate students' time constraints beyond traditional classroom instruction. By targeting this underrepresented research area, this study contributes original empirical evidence on the effectiveness of AI-based pronunciation tools, thereby advancing knowledge in both applied linguistics and educational technology fields. The integration of technology in pronunciation instruction addresses critical challenges such as a lack of individualized attention and limited practice opportunities that characterize traditional classroom environments (Tiwari, 2023).

Pronunciation remains one of the most persistent challenges in English as a Foreign Language (EFL) learning, particularly for Indonesian students. Traditional methods of pronunciation instruction often rely on teacher-centered approaches, which lack interactivity, fail to provide immediate feedback, and do not adequately address individual learners’ pronunciation difficulties. These limitations hinder students’ ability to develop accurate pronunciation, affecting not only their oral communication skills but also their overall language confidence. Although the integration of mobile technology into language education has introduced new opportunities, empirical research specifically examining the impact of mobile-assisted tools on pronunciation development remains scarce. This gap underscores the need for targeted investigations into the effectiveness of innovative applications that can provide real-time, personalized feedback, allowing learners to practice independently and at their own pace.

In response to this gap, the present study aims to investigate the effectiveness of the Lola Speak application in improving students’ English pronunciation. Designed with AI-driven features, Lola Speak provides learners with adaptive pronunciation feedback and flexible learning opportunities beyond the conventional classroom setting. The research aims to determine whether this tool can significantly enhance pronunciation accuracy and learner confidence compared to traditional instruction.

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LITERATURE REVIEW

The Role of Pronunciation in English Language Learning

Pronunciation plays a critical role in developing effective oral communication skills in English as a Foreign Language (EFL) contexts. It is no longer viewed as a marginal component in language education but rather as a fundamental aspect that supports intelligibility, fluency, and confidence in spoken interaction. Pronunciation is essential for communication and overall speaking proficiency (Azhar & Saboor, 2018). In the last five years, research has increasingly emphasized the importance of integrating pronunciation instruction into comprehensive language learning curricula. Research indicates that a balanced approach, encompassing both segmental features (individual consonant and vowel sounds) and suprasegmental features (intonation, stress, and rhythm), is crucial for effective instruction (Lasi, 2020). They highlight that suprasegmental features often have a greater impact on intelligibility than segmental issues, especially in real-time conversation. Moreover, pronunciation is closely linked to identity and perception. Learners are frequently judged by their pronunciation, which can affect their self-esteem and opportunities in academic or professional settings (Suzukida, 2021). Therefore, pronunciation teaching is not simply a matter of correcting sounds, but empowering learners to express themselves clearly and confidently. The growing use of technology-based tools and Mobile-Assisted Language Learning (MALL) platforms has also transformed how pronunciation is taught and practiced. Pronunciation teaching goes beyond merely correcting articulation errors; it involves empowering learners to communicate clearly and confidently while preserving their identity (Fuady & Sadikin, 2023). The advent of technology-based tools and Mobile-Assisted Language Learning (MALL) platforms has also significantly transformed pronunciation instruction. These tools provide interactive, personalized feedback, enabling learners to practice pronunciation in more autonomous and engaging ways (Mirzapour, 2023).

Common Problems in Pronunciation Among EFL Learners

Despite its significance, many learners continue to struggle with pronunciation due to various factors. The most prominent cause is L1 (first language) interference, where learners' native sound systems influence how they produce English sounds. For instance, in countries like Indonesia, English phonemes such as /θ/ (as in "think") and /ð/ (as in "this") are often difficult because they do not exist in local languages (Mahendra & Marantika, 2020). Persistent pronunciation issues include difficulties with vowel length distinctions, consonant clusters, and word stress. These problems often go unaddressed due to limited classroom time, lack of teacher training in phonetics, and a traditional emphasis on grammar and vocabulary (Salsabila et al., 2025). Similarly, pronunciation is often neglected in language testing and curriculum design, leading learners to prioritize it in their learning journey (Tiwari, 2023). Beyond curriculum design issues, a lack of meaningful exposure to native or near-native speech models. Many EFL learners live in environments where English is not used in daily communication, and classroom interaction is their primary source of input. As a result, learners develop "fossilized" errors in pronunciation habits that become entrenched and resistant to change over time.

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Motivation also plays a crucial role. Learners who feel insecure about their pronunciation may avoid speaking altogether, which further limits their opportunities for improvement. Learners with low confidence often avoid speaking. They may focus on memorising vocabulary or grammar rules rather than developing speaking accuracy. Teachers themselves frequently face obstacles. Not all language teachers receive sufficient training in phonology or pronunciation pedagogy (Zega, 2025). Teachers often lack adequate training, so many feel unsure about how to teach pronunciation effectively or provide constructive feedback on students' speech production (Couper, 2017). This gap in teacher education contributes to persistent pronunciation issues across various learning levels. Learner motivation and confidence also play a critical role. Students who feel insecure about their pronunciation may avoid speaking entirely, which further reduces opportunities to practice and receive corrective feedback (Almusharraf, 2022). Such learners often redirect their focus toward passive skills, such as memorizing vocabulary or grammar rules, instead of developing speaking fluency and accuracy (Alrabai, 2016).

Lola Speak as a Digital Pronunciation Tool

With the advancement of technology in education, several applications and platforms have emerged to address pronunciation difficulties. One such innovation is Lola Speak, a mobile application designed to support EFL learners in improving their pronunciation through real-time speech recognition and corrective feedback. Unlike passive listening tools, Lola Speak adopts interactive learning principles where learners practice speaking and receive instant, AI-generated assessments of their pronunciation accuracy. Experimental findings showed improvement in learners' pronunciation, particularly in the clarity of vowel sounds and stress patterns. The study emphasized that the mobile format allowed learners to practice consistently outside of class, creating a personalized learning experience (Hamdany & Rahman, 2025). The mobile format of the application facilitates autonomous learning, allowing learners to engage in consistent practice beyond the classroom, thereby fostering a more personalized learning experience (Alamri et al., 2020). Additionally, Lola Speak utilizes gamification features to enhance user engagement. Learners earn points, unlock levels, and track their progress, which contributes to higher motivation and consistency in practice. This finding is consistent with the results, which show an increase in the independence and confidence of learners using the app within just four weeks (Hamdany & Rahman, 2025).

Awareness of errors is vital in pronunciation learning. This app's feedback mechanism highlights mispronounced words and offers correct models, a pronunciation development known as noticing (Dai & Wu, 2023). Despite these strengths, such awareness enables learners to self-correct and internalize proper pronunciation more effectively. However, while the advantages are evident, some limitations must be noted. Not all learners have access to smartphones or stable internet connections. Additionally, some pronunciation nuances, especially suprasegmental features, may be less effectively captured by AI compared to human feedback. Therefore, combining apps with teacher instruction is recommended for optimal results (Ardini, 2023). AI-powered tools are advancing rapidly, but they may still fall short in capturing subtle suprasegmental features such as intonation and rhythm, which are often better addressed through human instruction (Fountaine et al., 2019). Therefore, a

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blended approach that integrates digital tools, such as Lola Speak, with teacher-led instruction is recommended for achieving optimal pronunciation outcomes.

METHODS

This study employed a quantitative, quasi-experimental design with a pretest–posttest control group to evaluate the effectiveness of the Lola Speak application in improving students' English pronunciation skills. By using this design, the researcher was able to systematically compare students' pronunciation performance before and after the intervention across two different learning conditions. Specifically, the experimental group practiced pronunciation using the Lola Speak application, while the control group received conventional classroom instruction without technological assistance. Both groups completed a pretest at the outset to establish their baseline pronunciation skills, followed by a posttest after the intervention period to assess learning gains.

The research was conducted at High School PAB 8 Sampali and a university in Medan, Indonesia, where all participants were enrolled in English language learning programs. A total of 60 students aged 14 to 21 participated in this study. Participants were selected using purposive sampling, ensuring that they met specific criteria: 1) they were currently enrolled in an English language course; 2) had comparable pronunciation proficiency based on pretest scores; 3) had access to a device capable of running the Lola Speak app; and 4) expressed willingness to participate consistently. The sample was equally distributed into two groups of 30 students each. This sample size was considered adequate to detect a moderate effect size at the 0.05 level of significance.

The instruments used in this study included pronunciation tests, a questionnaire, and observational notes. The pronunciation tests, administered as pre- and posttests, assessed students' word- and sentence-level pronunciation, including minimal pair discrimination. This type of structured assessment is appropriate for measuring pronunciation accuracy and fluency (Isaacs & Harding, 2017). To ensure scoring reliability, two independent raters evaluated all tests, and any discrepancies were resolved through discussion and consensus. Additionally, a questionnaire was distributed to the experimental group to explore their perceptions of the Lola Speak application, while open-ended items were used to capture more detailed feedback. Observation sheets were also used during the treatment sessions to record student engagement and interaction with the app.

To establish the validity and reliability of the instruments, two experienced English language educators reviewed the pronunciation tests to ensure content validity. Furthermore, Cronbach's alpha was calculated to confirm the internal consistency of the test items. The treatment was administered to the experimental group over a period of three weeks, consisting of five 30-minute sessions per week. These sessions involved listening to native speaker models, recording personal pronunciation, repeating target phrases, and completing interactive drills supported by real-time app feedback. Conversely, the control group received traditional pronunciation instruction without the use of technological tools, relying instead on face-to-face practice under teacher supervision.

Data collection began with the pretest before the intervention and concluded with the posttest upon its completion. In addition to quantitative data from test scores, qualitative

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data were gathered through questionnaires and observations to enrich the findings. Paired-sample t-tests were conducted to examine within-group improvements, while an independent-sample t-test compared posttest performance between groups. Statistical analyses were performed using SPSS version 25 at a 0.05 level of significance. Taken together, these procedures allowed the researcher to draw empirical conclusions about the effectiveness of the Lola Speak application in enhancing students' pronunciation skills.

RESULTS AND DISCUSSION

This section presents the results of the data analysis, which aimed to examine the effectiveness of the Lola Speak application in improving students' pronunciation skills.

Table 1. Descriptive Statistics of Pre-test and Post-test

Group	Test Type	N	Mean	Std. Deviation
Experimental	Pre-test	30	123.07	6.62
Experimental	Post-test	30	133.53	5.21
Control	Pre-test	30	123.13	6.84
Control	Post-test	30	132.20	5.11

Source: 2025 Research

As shown in **Table 1**, the mean posttest score for the experimental group (M = 133.53, SD = 5.21) was higher than the pretest mean (M = 123.07, SD = 6.62), suggesting substantial improvement in students' pronunciation skills after the intervention. Similarly, the control group also demonstrated an increase from pretest (M = 123.13, SD = 6.84) to posttest (M = 132.20, SD = 5.11), although the mean gain was smaller. Taken together, these findings suggest that both groups benefited from the instruction, yet the experimental group appeared to make more notable progress. To determine whether the improvements in both groups were statistically significant, the results of the paired sample t-test are reported in **Table 2**.

Table 2. Paired Sample t-Test Results

Group	Mean Difference	t	Df	Sig. (2-tailed)
Experimental	10.47	8.01	29	0.000
Control	9.07	7.62	29	0.000

Source: 2025 Research

To explore the significance of these improvements, a paired-sample t-test was conducted. The results, as displayed in **Table 2**, revealed a mean difference of 10.47 for the experimental group and 9.07 for the control group. Notably, both groups demonstrated a statistically significant improvement ($p < .001$), indicating that instruction was effective in enhancing pronunciation across both groups. Given these critical findings, further analysis was needed to determine whether the experimental intervention produced greater outcomes than the control condition. To assess whether the experimental group outperformed the

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control group following the intervention, an independent-sample t-test was carried out on post-test scores, with the results summarized in **Table 3**.

Table 3. Independent Sample t-Test Results (Post-test)

Group	Mean	T	Df	Sig. (2-tailed)
Experimental	133.53			
Control	132.20	2.24	58	0.029

Source: Research 2025

To compare the posttest performance between groups, an independent-samples t-test was performed. **Table 3** indicates that the experimental group's mean score was significantly higher than that of the control group, $t(58) = 2.24$, $p = .029$. This result underscores that the use of the Lola Speak application had a greater impact on students' pronunciation skills than conventional instruction alone. Building on this analysis, the magnitude of the intervention's effectiveness was then assessed by calculating the effect size. Following the analysis of group differences, attention was turned to the quality of the assessment instrument itself. **Table 4** presents a summary of item validity, providing evidence for the reliability and appropriateness of the test items used to measure students' pronunciation skills.

Table 4. Summary of Item Validity

Instrument	Number of Items	r-table	Valid Items
Pre-test	40	0.2638	40
Post-test	40	0.2640	40

Source: Research 2025

Table 4 presents the results of the item validity analysis for both the pre-test and post-test instruments. Using an r-table value of 0.2638 for the pre-test and 0.2640 for the post-test, all 40 items in each test were found to be valid. This indicates that each item successfully measures aspects relevant to students' pronunciation skills and makes a meaningful contribution to the overall assessment. Having confirmed the validity of all test items, the next step was to assess the instrument's internal consistency through reliability testing, as shown in **Table 5.**

Table 5. Reliability Testing Using Cronbach's Alpha

Test	Cronbach's Alpha (α)	Interpretation
Pre-test	0.84	High internal consistency
Post-test	0.87	High internal consistency

Source: Research 2025

Table 5 displays the results of the reliability analysis using Cronbach's Alpha. The pre-test achieved an alpha coefficient of 0.84, and the post-test scored 0.87, both of which fall within the range of high internal consistency. These results suggest that the assessment instruments are reliable and capable of producing consistent measurements of students'

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pronunciation skills across different test administrations. With valid and reliable instruments established, further analysis was conducted to determine the magnitude of the intervention's impact using Cohen's d.

$$d = \frac{M_{post} - M_{pre}}{SD_{pooled}} = \frac{133,53 - 123,07}{\sqrt{\frac{(6,62^2 + 5,21^2)}{2}}} = \frac{10,46}{5,96} \approx 1,75$$

A Cohen's d value of 1.75 is considered very large (Cohen, 1988), indicating that the use of the Lola Speak application has a powerful impact on improving students' pronunciation skills. While statistical analysis confirms the substantial effect of the intervention, visual representations offer additional insight into how these improvements manifest across and within groups. To further illustrate the differences in learning outcomes between the experimental and control groups, as well as the overall trend of score improvement, two figures were developed.

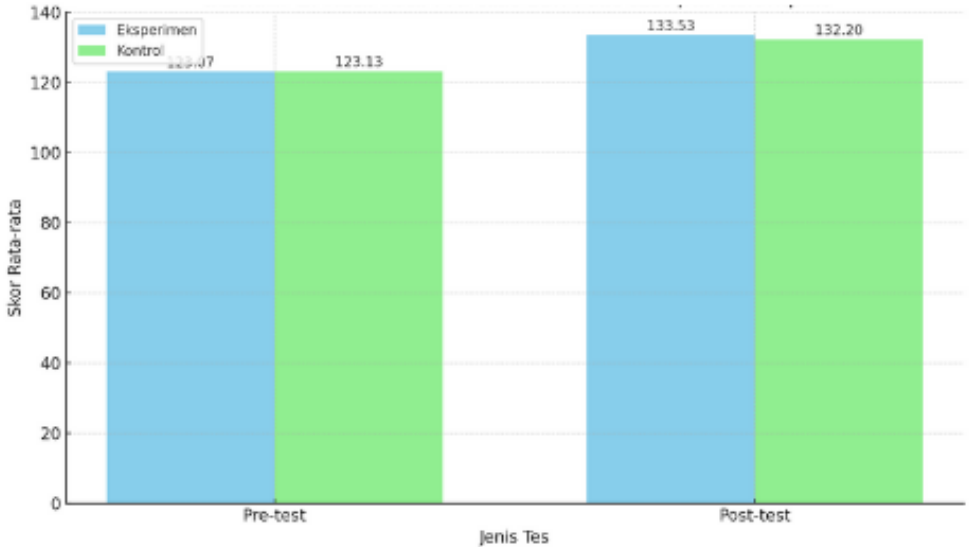

Figure 1. Average Pre-test and Post-test Scores by Group
Source: Research 2025

Figure 1 illustrates that both groups showed improvement from the pre-test to the post-test. However, the experimental group exhibited a steeper increase in average scores, reinforcing the finding that the Lola Speak application contributed substantially more to learning gains.

This bar chart illustrates that both groups experienced an improvement. However, the experimental group showed a sharper increase in scores compared to the control group.

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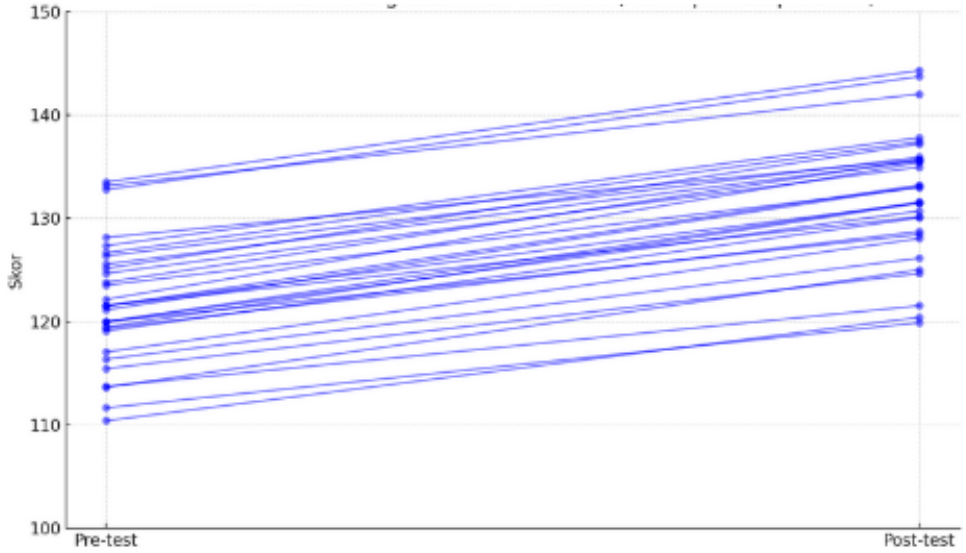

Figure 2. Individual Score Improvement Trend (Experimental Group)
Source: Research 2025

This line chart displays the pre-test and post-test scores of each participant in the experimental group. The graph shows a consistent upward trend among nearly all individuals, indicating that the intervention's effectiveness was widespread and consistent across the population.

Discussion

The findings of this study confirm that the use of the Lola Speak application significantly improves students' English pronunciation skills compared to conventional instructional methods. Specifically, as shown by the paired-sample t-test, both the experimental and control groups demonstrated significant improvements from pre- to post-test. However, the independent-sample t-test ($p < .05$) revealed that the experimental group experienced a greater mean gain. This more substantial progress highlights the advantages of the technology-based intervention over traditional practice, suggesting that the application was more effective in promoting students' pronunciation development. Beyond statistical significance, the results also hold strong practical importance. The average increase of 10.47 points observed in the experimental group is not only numerically meaningful but also directly applicable to students' spoken proficiency. Furthermore, the narrower range of scores in the experimental group indicates that improvements were distributed more evenly across learners of varying skill levels. This consistency in student performance reinforces the potential of Lola Speak to support all learners, including those with initially lower proficiency. Given that the research involved 60 junior high school students equally divided into experimental and control groups, the findings offer a valid comparative basis and strengthen the study's internal validity.

The observed learning gains can also be attributed to several pedagogical features of the Lola Speak application. Its real-time speech recognition and immediate feedback allowed learners to identify and correct phonetic errors promptly, facilitating autonomous and self-regulated practice without needing direct teacher assistance. This design aligns closely with

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constructivist principles, which emphasize the active construction of knowledge through practice and reflection. Furthermore, the app's gamified structure, which includes progression levels and point accumulation, appeared to sustain students' motivation and engagement. These findings support constructivist digital learning theory, which posits that interactive, learner-centred environments enable deeper cognitive engagement and more meaningful language acquisition (Pechenkina et al., 2017).

From a theoretical perspective, the results also support the Technology Acceptance Model (TAM 3), which asserts that perceived usefulness and ease of use drive learners' acceptance of educational technologies (Ibrahim et al., 2017). Given the substantial improvements in pronunciation and students' consistent participation over the three-week intervention, it can be inferred that students perceived the app as intuitive, engaging, and valuable for learning. This finding is further supported by prior research indicating that mobile-assisted language tools enhance learners' fluency, articulation, and motivation in English as a Foreign Language (EFL) contexts (Hirsh-Pasek et al., 2015; Rajendran & Yunus, 2021). Thus, this study expands the existing literature by providing quantitative evidence on the effectiveness of an AI-powered pronunciation app when implemented in a formal classroom setting.

Additionally, these findings contribute new empirical support to the broader body of research on mobile-assisted language learning. Prior studies on AI-based learning tools often report small to moderate effects (Dja'far & Hamidah, 2024; Yuen & Schlote, 2024). especially when they lack interactive feedback and tailored practice. The present results, with a large effect size of d = 1.75, demonstrate that Lola Speak's real-time feedback and personalized exercises yielded more substantial improvements in students' pronunciation. Furthermore, the intervention's focus on active practice, repetition, and automated support underscores the importance of aligning technological design with effective pedagogy to enhance learning.

Methodologically, the quasi-experimental design, inclusion of a control group, and validation of instruments enhanced the rigour of this research. These strengths address some of the limitations noted in prior case-study research that lacked comparative conditions or rigorous testing procedures. However, several limitations must also be acknowledged. First, the study was conducted in a single school with a relatively homogenous and small sample, which restricts the generalizability of the findings. Second, the intervention was limited to three weeks, precluding conclusions about long-term retention of pronunciation gains. Third, extraneous variables, such as students' prior exposure to English outside of school, digital literacy levels, or language learning anxiety, were not controlled and could have influenced the observed results. Lastly, the lack of a delayed posttest means that the sustainability of these improvements remains unknown. Future research should incorporate a larger and more diverse sample, longitudinal follow-up assessments, and controls for additional background variables to strengthen causal inferences.

Despite these limitations, the findings offer important practical implications for multiple educational stakeholders. For language teachers, mobile-assisted tools like Lola Speak provide a promising supplementary resource to enhance traditional pronunciation instruction and address common classroom constraints, such as limited practice time and lack of individualized feedback. For school leaders and policymakers, these findings support the integration of evidence-based educational technology into language curricula to promote digital literacy and more consistent skill development across students. Ultimately, for

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educational technology developers, this study highlights the importance of incorporating adaptive, interactive features and gamification to enhance user engagement and improve learning outcomes.

In summary, this research suggests that the success of digital learning tools depends not merely on their accessibility but also on their pedagogical design and alignment with learners' needs. The Lola Speak application demonstrates how thoughtfully developed digital tools can enhance language acquisition, promote active student participation, and foster learner autonomy, all key components of sustainable and effective language learning, particularly in EFL contexts such as Indonesia.

CONCLUSION

This study investigated the effectiveness of the Lola Speak application in improving students' English pronunciation. The research was grounded in the persistent challenges Indonesian EFL learners face with pronunciation accuracy, particularly in distinguishing phonemes that are not present in their native language. The limitations of conventional pronunciation instruction, which often lack interactivity, individualized attention, and immediate feedback, underscore the need for innovative digital learning tools.

The findings revealed that students who used Lola Speak demonstrated notable improvements in pronunciation compared to those receiving traditional instruction. These improvements are reflected in enhanced consistency and clarity of speech, which suggests that the application successfully supported learners' phonological development. The integration of real-time feedback, speech recognition, and gamified features contributed to increased learner engagement and more targeted pronunciation practice. These results confirm the study's primary objective, which was to assess whether mobile-assisted pronunciation practice can enhance students' performance in a short instructional period.

From a theoretical standpoint, the study supports the principles of the Technology Acceptance Model and constructivist digital learning theory. Students' engagement with the application indicates a positive perception of its usefulness and ease of use. The interactive and personalized nature of the learning environment offered by Lola Speak aligns with the constructivist view that meaningful learning emerges from active participation and learner autonomy.

The study provides empirical evidence that supports the integration of mobile-assisted pronunciation tools in formal language instruction. These findings have important implications for educational practitioners seeking alternative solutions to overcome resource limitations in EFL classrooms, such as restricted access to native speaker models or language laboratories. Furthermore, the study highlights the potential of well-designed digital applications to complement traditional instruction by fostering motivation, accessibility, and individualized learning experiences in the acquisition of pronunciation.

AUTHOR'S NOTE

The authors declare that there is no conflict of interest regarding the publishing of this work. The authors confirm that the article's data and content are free of plagiarism.

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