THE EFFECTS OF ELSA SPEAK AND MOTIVATION ON SEGMENTAL AND SUPRASEGMENTAL PRONUNCIATION

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Abstract
This study examines the effects of the ELSA Speak application and learning motivation on students' segmental and suprasegmental pronunciation in an EFL context in Indonesia. While mobile-assisted language learning has been widely explored, limited studies have investigated the combined role of digital tools and learner motivation in improving specific pronunciation features. This study employed a quasi-experimental design involving an experimental and a control group with 45 junior high school students. The experimental group used ELSA Speak, while the control group received conventional instruction. Data were collected through pronunciation tests and a motivation questionnaire and analyzed using t-tests and multiple regression. The findings demonstrate that ELSA Speak substantially enhances students' pronunciation, particularly in segmental and suprasegmental aspects. Learning motivation also emerged as a strong predictor of pronunciation improvement, indicating that higher motivation leads to better performance. These results underscore the importance of integrating technology with motivational support in pronunciation instruction. This study contributes to technology-assisted language learning and provides practical insights for English teachers. However, the relatively small sample and non-random sampling limit the generalizability of the findings.
Keyword: *ELSA application, motivation, pronunciation achievement, experimental research*

INTRODUCTION

Pronunciation is a crucial component of English language learning as it directly affects learner's intelligibility and overall communicative competence. In EFL contexts, achieving intelligible pronunciation is more essential than attaining native-like accuracy, as it enables learners to communicate effectively in both academic and real-life situations (Harmer, 2007). However, many EFL learners continue to experience persistent difficulties in developing accurate pronunciation due to limited exposure to authentic input, insufficient opportunities for meaningful practice, and the lack of immediate corrective feedback (Gilakjani, 2016). These challenges indicate that conventional instructional approaches are often insufficient to support effective pronunciation development. This perspective is aligned with the intelligibility principle, which emphasizes that the primary goal of pronunciation instruction is to ensure comprehensible communication rather than native-like accuracy (Levis, 2020).

In the Indonesian EFL context, pronunciation remains one of the most problematic aspects of English learning. Learners frequently struggle with segmental features, such as vowels and consonants, as well as suprasegmental features, including stress, rhythm, and intonation. These difficulties are largely influenced by differences between the phonological systems of Indonesian and English, which often result in systematic pronunciation errors and reduced intelligibility (Ristati et al., 2024). Despite its importance, classroom instruction tends to provide limited opportunities for individualized feedback, thereby constraining students' pronunciation improvement. This situation highlights the urgent need for more adaptive and learner-centered instructional approaches.

The rapid development of mobile-assisted language learning (MALL) has introduced innovative solutions to address

these limitations. The integration of artificial intelligence in applications such as ELSA Speak enables learners to receive immediate, personalized, and continuous feedback on their pronunciation. Recent studies have demonstrated that ELSA Speak and similar AI-based tools significantly enhance learners' pronunciation accuracy and speaking performance (Kholis, 2021; Anggraini, 2022; Wibowo et al., 2023; Zakiah, 2024). Furthermore, research on MALL indicates that digital learning tools can improve learners' engagement and speaking skills (Rahman et al., 2023). Recent studies have further highlighted the effectiveness of mobile-assisted language learning and AI-driven pronunciation tools in enhancing learners' pronunciation accuracy and intelligibility (Li, 2022; Fouz-González, 2020). In particular, automatic speech recognition technology provides immediate and individualized feedback, which plays a crucial role in facilitating pronunciation development (McCrocklin, 2016). However, most of these studies primarily emphasize technological effectiveness while paying limited attention to learner-related factors. Consequently, improvements in pronunciation are often attributed mainly to technology, without adequately considering how individual differences shape learning outcomes.

From a theoretical perspective, motivation is widely recognized as a key determinant of successful language learning. According to Dörnyei (2020) and Deci and Ryan (2000), motivation influences learners' effort, persistence, and level of engagement. This is further supported by contemporary perspectives on language learning motivation, which emphasize that motivational processes play a central role in sustaining learner engagement, particularly in technology-enhanced learning environments (Dörnyei & Al-Hoorie, 2017). In technology-assisted learning environments, motivation becomes even more crucial, as learners are required to actively interact with digital tools and regulate their own learning processes. Empirical evidence suggests that motivated learners are more likely to utilize feedback effectively and achieve better learning outcomes (Wijaya & Putri, 2022; Fauzan et al., 2024; Hasanah et al., 2024). Conversely, learners with low motivation may not fully benefit from technological tools, regardless of their potential advantages. Therefore, motivation can be viewed as a factor that not only directly affects learning outcomes but also enhances or constrains the effectiveness of instructional technology.

Despite the growing body of research on both technology-assisted pronunciation learning and learner motivation, previous ddies have largely examined these variables in isolation. Several studies have confirmed the effectiveness of ELSA Speak in improving pronunciation (Kurnia et al., 2022; Sonia, 2023; Zakiah, 2024), while others have highlighted the role of motivation in influencing language learning achievement (Mahmood, 2025; Antasari & Antasari, 2025). However, limited empirical research has investigated the combined effects of AI-based pronunciation tools and learners' motivation on specific pronunciation features, particularly at the junior high school level in the Indonesian EFL context. This gap is significant because it overlooks the interaction between external factors (technology) and internal factors (motivation) in shaping pronunciation development. Without examining this interaction, the understanding of pronunciation learning remains incomplete. Therefore, this study aims to investigate the effects of the ELSA Speak application and learning motivation on students' pronunciation achievement. Specifically, this study examines the individual and combined contributions of ELSA Speak and motivation to students' segmental and suprasegmental pronunciation performance. It is hypothesized that both variables, individually and jointly, significantly influence students'

pronunciation achievement, indicating that effective pronunciation learning is shaped by the interaction between technological support and learner motivation.

METHOD

This study employed a quantitative approach using a quasi-experimental design to examine the effects of the ELSA Speak application and students' learning motivation on pronunciation achievement. A quantitative method was selected to enable objective measurement and statistical analysis of relationships among variables (Creswell, 2014). Quasi-experimental designs are commonly used in educational research where random assignment is not feasible, yet they still allow for meaningful comparison of treatment effects in real classroom settings (Creswell, 2014; Ary et al., 2010). However, as this study did not involve full randomization, the findings are interpreted as indicating treatment effects within a classroom context rather than establishing definitive causal relationships.

The research design was a pretest–posttest control group design. This design allowed comparison of students' pronunciation performance before and after the treatment, as well as between groups receiving different instructional approaches (Ary et al., 2010). To control potential confounding variables, both groups were taught using the same learning objectives, materials, and instructional duration. The only difference was the use of the ELSA Speak application in the experimental group. Additionally, pretest scores were used to ensure that both groups had comparable initial pronunciation ability. The population of this study consisted of all seventh-grade students at Rumah Harapan Tobasa Private Junior High School in the 2025/2026 academic year. A total of 45 students were selected using purposive sampling based on similar initial pronunciation ability and willingness to participate. The sample was divided into an experimental group (n = 22) and a control group (n = 23). Although random assignment was not feasible, efforts were made to ensure comparability between groups. Ethical considerations were taken into account by obtaining permission from the school and informed consent from all participants prior to data collection.

This study involved two independent variables and one dependent variable. The independent variables were the use of the ELSA Speak application and students' learning motivation. The use of automatic speech recognition in pronunciation learning has been shown to provide effective, immediate feedback that enhances learners' pronunciation development (McCrocklin, 2016). Motivation was treated as a predictor variable based on Self-Determination Theory (Deci & Ryan, 2000), encompassing intrinsic and extrinsic dimensions. Self-Determination Theory has been widely applied in second language acquisition research to explain how intrinsic and extrinsic motivation influence learners' engagement and achievement (Dörnyei & Al-Hoorie, 2017). The dependent variable was pronunciation achievement, defined as students' ability to produce intelligible and accurate English pronunciation, including both segmental and suprasegmental features (Celce-Murcia et al., 2010).

Data were collected using two instruments: a pronunciation test and a motivation questionnaire. The pronunciation test consisted of word lists and short sentences designed to assess vowel, consonant, and word stress accuracy. The rubric assessed three main aspects: vowel accuracy, consonant accuracy, and word stress, each evaluated separately before being combined into a total score. This approach is consistent with established frameworks of pronunciation assessment, which emphasize the importance of both segmental and suprasegmental features in determining intelligibility (Derwing & Munro, 2015; Saito & Plonsky, 2019).

Students' performance was evaluated using a scoring rubric adapted from established pronunciation assessment criteria, with scores ranging from 1 (poor) to 4 (excellent) for each component. To ensure scoring consistency, two trained raters independently assessed students' performance, and inter-rater reliability was calculated.

The motivation questionnaire was adapted from established scales based on Self-Determination Theory and consisted of 20 items measured on a four-point Likert scale. The questionnaire assessed intrinsic motivation, extrinsic motivation, and learning persistence. Content validity was established through expert judgment, while reliability was tested using Cronbach's Alpha, with a coefficient above 0.70 indicating acceptable internal consistency (Gliem & Gliem, 2003). The data collection procedure was conducted over a period of six weeks. In the first stage, a pronunciation pretest was administered to both groups to measure baseline ability. In the second stage, the experimental group received pronunciation training using the ELSA Speak application for three sessions per week, while the control group received conventional instruction with the same duration, materials, and learning objectives. In the final stage, a posttest was administered to both groups, followed by the distribution of the motivation questionnaire.

Data analysis was conducted using SPSS. Prior to hypothesis testing, assumption tests including normality and homogeneity were performed to ensure the suitability of parametric analysis. A paired samples t-test was used to analyze within-group improvement, while an independent samples t-test was conducted to compare posttest scores between groups. Furthermore, multiple regression analysis was applied to examine the contribution of motivation to pronunciation achievement. To provide a more comprehensive interpretation, effect sizes were calculated using Cohen's d for t-tests and R^2 for regression analysis, indicating the magnitude of the observed effects. In addition, 95% confidence intervals were reported to provide a more precise estimation of the results, as recommended in quantitative research reporting (Cohen, 1988; Plonsky & Oswald, 2014). Despite these methodological considerations, the findings of this study should be interpreted with caution due to the relatively small sample size and the use of non-random sampling, which may limit the generalizability of the results.

RESULTS AND DISCCUSION

The results are presented using descriptive and inferential statistics to provide a comprehensive analysis of students' pronunciation performance and the role of learning motivation. Students' Pronunciation Scores:

Table 1: Descriptive Statistics of Pronunciation Scores

Group	N	Pre-test Mean	Post-test Mean	Improvement
Experimental	22	63.59	80.45	+16.86
Control	23	63.91	71.91	+8.00

Both groups demonstrated improvement following instruction. However, the experimental group showed a substantially greater mean gain compared to the control group. The comparable pre-test scores indicate that both groups had similar baseline pronunciation ability prior to the intervention

Instrument Reliability:

Table 2. Reliability of Research Instruments

Instrument	Reliability Test	Value	Category
Pronunciation Test	ICC	0.946	Excellent
Motivation Questionnaire	Cronbach's Alpha	0.934	Very High

These findings confirm that the instruments were highly reliable and appropriate for data collection. Assumption Testing:

Table 3. Assumption Testing Results

Test	Method	Sig. Value	Interpretation
Normality	Shapiro–Wilk	> 0.05	Normal distribution
Homogeneity	Levene's Test	0.744	Homogeneous

All statistical assumptions for parametric testing were met. Hypothesis Testing, A paired samples t-test revealed a statistically significant improvement in the experimental group ($t = -11.54$, $p < .001$). The effect size was very large (Cohen's $d = 1.82$), indicating a substantial practical impact of the intervention. The 95% confidence interval for the mean difference was [14.20, 19.52], which confirms the stability and precision of the observed effect. An independent samples t-test showed a significant difference between the experimental and control groups ($t = 3.42$, $p = .001$). The effect size was large (Cohen's $d = 0.91$), with a 95% confidence interval of [3.65, 13.42], suggesting that the use of the ELSA Speak application had a meaningful and practically significant impact on students' pronunciation performance.

Regression analysis further indicated that learning motivation significantly predicted pronunciation achievement ($\beta = 1.113$, $p < .001$), with $R^2 = 0.68$, meaning that 68% of the variance in pronunciation scores was explained by students' motivation. This reflects a strong predictive relationship. Further analysis revealed that students with higher motivation levels achieved greater pronunciation gains, particularly in the experimental group. This finding suggests a moderating tendency, in which motivation enhances the effectiveness of the ELSA Speak application. In other words, the impact of technology on pronunciation improvement appears to be stronger among highly motivated learners. The findings of this study indicate that: The ELSA Speak application significantly improves students' pronunciation with a very large effect size, Learning motivation is a strong predictor of pronunciation achievement., The interaction between ELSA Speak and motivation results in the highest level of improvement, highlighting the combined influence of external (technology) and internal (motivation) factors.

Discussion This study aimed to examine the effects of the ELSA Speak application and learning motivation on students' pronunciation achievement. The findings provide important insights into how technological and psychological factors interact to influence pronunciation development in EFL contexts. First, the significant improvement observed in the experimental group suggests that the use of the ELSA Speak application enhances pronunciation learning more effectively than conventional instruction. This finding can be explained by the pedagogical affordances of AI-based speech recognition technology. Unlike traditional classroom settings, where feedback is often delayed and limited, ELSA Speak provides immediate, individualized, and repetitive feedback. Such real-time corrective input allows learners to notice their pronunciation errors and adjust their production accordingly, which aligns with the concept of "noticing" in second language acquisition. In this sense, the effectiveness of ELSA Speak lies not merely in its technological novelty, but in its ability to facilitate continuous practice and self-regulated learning.

This result is consistent with previous studies that highlight the effectiveness of AI-assisted pronunciation tools (Kholis, 2021; Wibowo et al., 2023; Zakiah, 2024). However, unlike earlier research that primarily reports improvement outcomes, the present study extends these findings by demonstrating that the impact of such technology is not uniform across learners, but depends on individual learner characteristics, particularly motivation. Second, the

significant contribution of learning motivation to pronunciation achievement confirms the central role of motivational factors in language learning. From the perspective of Self-Determination Theory (Deci & Ryan, 2000) and Dörnyei's (2020) L2 motivational framework, motivated learners tend to invest more effort, persist longer, and engage more actively in learning activities. In the context of pronunciation learning, which requires repeated practice and attention to detail, motivation becomes a critical driver of improvement. The strong predictive power of motivation found in this study suggests that technological tools alone are insufficient without learners' willingness to actively engage with them.

More importantly, the findings indicate that motivation does not only function as an independent predictor, but also as a factor that enhances the effectiveness of the ELSA Speak application. Students with higher motivation levels were more likely to practice consistently, utilize feedback effectively, and engage more deeply with the application. This suggests a complementary relationship between external support (technology) and internal drive (motivation). In other words, the success of technology-enhanced learning is mediated by learners' motivational states. This finding supports previous studies (Rahman et al., 2023; Hasanah et al., 2024), but provides a more integrated perspective by showing how these variables interact in shaping learning outcomes.

Another important implication of this study is that pronunciation learning should not be viewed solely as a technical skill, but as a dynamic process influenced by both instructional design and learner psychology. While ELSA Speak provides an effective platform for individualized practice, its impact is maximized only when learners are sufficiently motivated to engage with it. Therefore, teachers play a crucial role not only in integrating technology into instruction, but also in fostering students' motivation to ensure optimal learning outcomes. Despite these contributions, several limitations should be acknowledged. First, the use of purposive sampling and a relatively small sample size limits the generalizability of the findings. Second, the quasi-experimental design does not allow for full control of external variables, such as individual learning differences or out-of-class practice. Third, although this study suggests a moderating role of motivation, the interaction effect was not tested using advanced statistical modeling, which may be explored in future research. Future studies are recommended to employ larger and more diverse samples, as well as more rigorous experimental designs, to further validate these findings. Additionally, future research could investigate other learner-related factors, such as anxiety or learning strategies, that may interact with technology use in pronunciation learning.

CONCLUSION

This study demonstrates that the integration of the ELSA Speak application and students' learning motivation plays a significant role in enhancing pronunciation achievement in EFL contexts. Beyond confirming the effectiveness of technology-assisted learning, the findings highlight that successful pronunciation development is not solely determined by instructional tools, but by the interaction between technological support and learners' motivational engagement.

From a pedagogical perspective, these findings suggest that the use of AI-based applications such as ELSA Speak can be effectively incorporated into classroom instruction to provide individualized practice and immediate feedback, which are often limited in traditional settings. However, the effectiveness of such tools depends on how actively students engage with them. Therefore, teachers are encouraged not only to integrate technology into their teaching, but also to foster students' motivation through supportive learning environments, meaningful tasks,

and continuous encouragement. At a broader level, these findings imply that curriculum designers and educational institutions should consider integrating technology-assisted pronunciation learning into English language programs. Providing access to digital learning tools and promoting learner autonomy may contribute to more effective and sustainable language learning outcomes.

Despite these contributions, this study has several limitations. The use of a relatively small sample and non-random sampling limits the generalizability of the findings. In addition, the quasi-experimental design does not fully control external variables that may influence students' performance. Future research is recommended to involve larger and more diverse samples, apply more rigorous experimental designs, and explore additional factors such as learner anxiety, learning strategies, or long-term retention. Further studies may also investigate the interaction between technology use and motivational variables using more advanced statistical approaches.

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