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APLICACIÓN ELSA COMO HERRAMIENTA TECNOLÓGICA PARA FOMENTAR LA PRONUNCIACIÓN Y LA FLUIDEZ EN UN AULA DE INGLÉS COMO LENGUA EXTRANJERA EN ECUADOR

ELSA APP AS A TECHNOLOGICAL TOOL TO FOSTER PRONUNCIATION AND FLUENCY IN AN ECUADORIAN EFL CLASSROOM

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Aplicación ELSA como Herramienta Tecnológica para Fomentar la Pronunciación y la Fluidez en un Aula de Inglés como Lengua Extranjera en Ecuador

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RESUMEN

Este estudio evalúa la efectividad de la aplicación ELSA (English Language Speech Assistant) en la mejora de la pronunciación y la fluidez en la educación de inglés como Lengua Extranjera (EFL). Involucrando a 100 estudiantes de 10.º grado de una escuela pública en Santa Elena, los participantes se dividieron en un grupo de control que recibió instrucción tradicional y un grupo experimental que utilizó ELSA para la práctica específica de pronunciación. Durante 12 semanas, se realizaron evaluaciones antes y después de la intervención para medir la precisión en la pronunciación, la entonación, la fluidez y las habilidades auditivas. Los análisis estadísticos, incluyendo pruebas t apareadas y ANOVA, revelaron mejoras significativas en el grupo experimental, con un aumento en las puntuaciones de pronunciación de 36.92 a 42.98 y ganancias notables en otras áreas. Las métricas de uso indicaron que una mayor participación en la aplicación estaba positivamente correlacionada con mejoras en el rendimiento. Estos hallazgos demuestran que ELSA mejora significativamente las habilidades lingüísticas clave, subrayando su efectividad como herramienta tecnológica en la educación EFL.

***Palabras claves*:** aplicación ELSA, pronunciación, fluidez

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ELSA app as a Technological Tool to Foster Pronunciation and Fluency in an Ecuadorian EFL Classroom

ABSTRACT

This study evaluates the effectiveness of the ELSA (English Language Speech Assistant) app in enhancing pronunciation and fluency in English as a Foreign Language (EFL) education. Involving 100 10th-grade students from a public school in Santa Elena, participants were divided into a control group receiving traditional instruction and an experimental group using ELSA for targeted pronunciation practice. Over 12 weeks, pre- and post-intervention assessments measured pronunciation accuracy, intonation, fluency, and listening skills. Statistical analyses, including paired t-tests and ANOVA, revealed significant improvements in the experimental group, with pronunciation scores rising from 36.92 to 42.98 and notable gains in other areas. Usage metrics indicated that increased app engagement was positively correlated with performance improvements. These findings demonstrate that ELSA significantly enhances key language skills, underscoring its effectiveness as a technological tool in EFL education.

***Keywords*:** Elsa App, pronunciation, fluency

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INTRODUCTION

In recent years, the integration of technological tools into English as a Foreign Language (EFL) education has gained prominence, particularly for enhancing critical language skills such as pronunciation and fluency, key components of communicative competence (Derwing & Munro, 2005). However, traditional language teaching often prioritizes grammar and vocabulary over pronunciation, leading to persistent challenges in intelligibility and fluency.

Recent technological advancements have transformed language learning, especially in pronunciation and fluency. Tools that provide personalized and immediate feedback have become invaluable for language development (Godwin-Jones, 2018). ELSA (English Language Speech Assistant) app is one of the most innovative tools which through advanced speech recognition technology, aims to help language learners refine their pronunciation and fluency. It offers interactive and personalized practice, featuring Speech Recognition Technology for instant feedback on pronunciation accuracy, adaptive exercises tailored to individual performance, and progress tracking that monitors improvements over time. These capabilities align with research emphasizing the importance of immediate feedback and personalized practice for effective pronunciation training (Levis, 2007).

As educational institutions increasingly adopt such technologies, evaluating their effectiveness becomes crucial. Research suggests that ELSA's approach and real-time feedback mechanisms positively impact pronunciation accuracy and speaking fluency (Smith et al., 2023). Comparative studies also indicate that ELSA's advanced features contribute to more effective learning outcomes than other tools (Jones & Chen, 2022). This study aims to evaluate the ELSA app by addressing a key research question that explores the challenges users face with ELSA and their impact on the learning experience. By comparing pre- and post-intervention assessments, the study seeks to assess the app's effectiveness in improving pronunciation and fluency. Analyzing user feedback and examining the differences in scores before and after the intervention will help identify the app's impact on language learning outcomes and highlight areas for improvement.

Understanding these effects is crucial as educational practices evolve, and this study will provide insights into how ELSA enhances language skills and offer recommendations based on user experiences.

To understand the current landscape of the ELSA app as a technological tool for enhancing pronunciation and fluency in Ecuadorian EFL classrooms, it is crucial to examine the existing body of literature on several key aspects. This review will explore the following themes: the role of fluency and pronunciation in EFL classrooms, the impact of technology and mobile learning on language acquisition, and the specific contributions of the ELSA app in improving these skills. Additionally, it will assess the empirical evidence on the app's effectiveness and its influence on EFL learners' outcomes.

1. Fluency and Pronunciation in EFL Classrooms

Fluency and pronunciation play a crucial role in learning English as a Foreign Language (EFL). Both aspects are key to effective communication, with pronunciation particularly influencing how well a speaker is understood and perceived in terms of language proficiency (Gilakjani, 2016). In several EFL environments, such as in Ecuador, learners often face difficulties distinguishing sounds, using correct intonation, and applying proper stress due to limited interaction with native speakers and insufficient practice in realistic contexts (Celce-Murcia et al., 2010; Derwing & Munro, 2015). These challenges highlight the need for innovative teaching methods that can better support the development of pronunciation and, in turn, overall fluency (Leong & Ahmadi, 2017; Nguyen et al., 2024). Effective pronunciation instruction boosts learners' confidence and communication skills, making it a central element of EFL education (Hanna et al., 2022).

2. Technology in Language Learning

Technology has increasingly become a vital component in language learning, offering fresh approaches to improve various skills, especially pronunciation (Golonka et al., 2014). Digital tools like mobile-assisted language learning (MALL) applications utilize advanced technologies such as artificial intelligence (AI) to provide learners with immediate feedback and tailored learning experiences (Chun, 2016; Akhmad & Munawir, 2022). The ELSA app, for example, is recognized for its user-friendly design, interactive features, and ability to give personalized feedback, making it particularly useful for meeting the diverse needs of EFL learners (Godwin-Jones, 2017; Darsih et al., 2021). Research suggests that these tech-driven methods boost learner engagement and motivation, ultimately leading to better pronunciation and fluency (Haryadi & Aprianoto, 2020).

3. Mobile Learning in Language Acquisition

Mobile learning, also known as m-learning, is becoming more significant in the field of language learning because it allows for flexible, on-the-go practice. The ELSA app is an example of this trend, using AI-powered speech recognition to provide customized lessons and instant feedback, helping learners refine their pronunciation, intonation, and fluency (Nguyen & Pham, 2020). Its gamified elements, such as rewards and progress tracking, further encourage consistent practice and engagement, making it an effective tool for independent learning (Chen & Hsu, 2021). Studies show that ELSA significantly improves pronunciation and fluency by offering frequent, targeted feedback and practice opportunities, which are often missing in conventional classroom settings (Karim et al., 2023; Nguyen et al., 2024).

4. ELSA to Improve Fluency and Pronunciation

The ELSA app has gained recognition for its effectiveness in enhancing fluency and pronunciation among EFL learners. By using AI and speech recognition technology, ELSA provides real-time feedback, enabling users to quickly identify and correct their pronunciation mistakes (Karim et al., 2023). Research indicates that ELSA is particularly effective in EFL settings, where traditional classrooms may not offer enough chances for personalized practice (Nguyen et al., 2024). Studies from Ecuador show notable improvements in students' pronunciation and fluency when using ELSA, highlighting its potential as a powerful language-learning tool (Mejía & Acosta, 2022). The app's capacity to deliver targeted, individualized practice based on specific learner needs makes it an excellent resource for fostering language proficiency (Torres & Fernández, 2023).

5. Impact of ELSA App on EFL Language Learners

ELSA app has had a significant impact on EFL learners, particularly in terms of improving pronunciation and speaking fluency. Research by Vu and Nguyen (2020) demonstrates that students using ELSA showed significant progress in pronouncing challenging English sounds and felt more motivated due to the app's fun, game-like elements. Similarly, Jiang and Kessler (2022) found that the app's feedback features help learners better understand their pronunciation mistakes, resulting in more effective and sustained practice, which is crucial for achieving fluency. For Ecuadorian EFL learners,

studies have shown that ELSA's adaptable features and user-friendly design greatly enhance pronunciation and fluency, making it a valuable tool in language education (Torres & Fernández, 2023).

METHODOLOGY

This study employs a quasi-experimental design, which is a type of empirical research used to evaluate the effectiveness of an intervention while controlling for variables that may impact the outcome. This design was selected due to the impracticality of random assignment, allowing for a practical comparison of the intervention's impact. Participants were not randomly assigned but were grouped based on pre-existing classes to minimize disruption and maintain educational continuity. This approach focused on directly assessing the intervention's effect through pre- and post-tests and ongoing performance measurements.

The study involved 100 10th-grade English as a Foreign Language (EFL) students from a public school in Santa Elena, a rural area, during the first academic trimester. Participants were divided into two groups: the control group, comprising 50 students from classes 10th A and 10th B, received traditional English instruction, which included teacher-led lessons, textbook exercises, and oral practice without technological aids. The experimental group, consisting of 50 students from classes 10th C and 10th D, used the ELSA app for targeted pronunciation practice. This group engaged with the ELSA app through integrated practice sessions, receiving three hours of English instruction per week with specific goals and assignments through the app, regular practice sessions, and ongoing feedback. A technical support plan was in place to resolve any app-related issues.

The research was organized into three distinct phases over 12 weeks. In the preparation phase (week 1), informed consent was obtained from all participants and their parents through written forms. The experimental group underwent a training session on the ELSA app, conducted in person over two hours. This session included detailed instructions on the app's features and functionalities, a hands-on demonstration, and troubleshooting guidance to ensure effective use. Compatibility with students' devices was verified, and the app was integrated into the curriculum to align with instructional goals.

During the intervention phase (weeks 2 through 10), pre-intervention assessments established baseline measurements of pronunciation accuracy and speaking fluency using the ELSA app. The app employs advanced speech recognition technology to evaluate pronunciation aspects such as phoneme accuracy,

stress patterns, intonation, and fluency aspects including speech smoothness and speed. Real-time feedback facilitated immediate correction and practice. The control group continued with conventional teaching methods, which included teacher-led lessons, textbook exercises, and oral practice without technological aids. These methods focused on standard pronunciation drills, repetitive practice, and manual teacher feedback. In contrast, the experimental group engaged with the ELSA app through integrated practice sessions, receiving three hours of English instruction per week with specific goals and assignments through the app, regular practice sessions, and ongoing feedback. A technical support plan was in place to resolve any app-related issues.

In the final post-intervention phase (weeks 11 and 12), post-intervention assessments were administered to evaluate improvements in pronunciation accuracy and speaking fluency. Quantitative data were collected through standardized pre- and post-intervention assessments provided by the ELSA app, measuring pronunciation accuracy, intonation, fluency, and listening skills. The app's scoring system tracked changes over time, and usage metrics, including session frequency and duration, were recorded. Data analysis was performed using Excel, and results were interpreted to assess the effectiveness of the intervention.

Paired t-tests were employed to assess the effectiveness of the ELSA app intervention by comparing pre- and post-intervention scores for pronunciation accuracy and speaking fluency. This statistical method determines if there is a significant difference between the means of two related groups (pre- and post-intervention assessments for the same participants) (Cohen, 1988; Field, 2013). The paired t-test is appropriate for evaluating within-subject changes and assessing the impact of the ELSA app. Assumptions of the paired t-test, including the normality of the difference scores, were checked using [specify method or software], ensuring the validity of the results (Gupta & Vanneman, 2016; Hinton et al., 2014).

RESULTS AND DISCUSSION

The primary aim of this study was to evaluate the efficacy of the ELSA method compared to traditional teaching approaches in enhancing language proficiency. The results clearly indicate that the ELSA method provided superior outcomes in language skills development.

Table 1 presents the descriptive statistics for both the control and experimental groups before and after the intervention. Prior to treatment, both groups exhibited similar mean scores across all assessed skills: pronunciation, listening, word stress, intonation, and fluency. For instance, the control group's pre-treatment mean score for pronunciation was 38.84 (SD = 3.297), while the experimental group's mean was 36.92 (SD = 2.586). Post-treatment, the experimental group showed significant improvements across all skills, with the mean score for pronunciation rising to 42.98 (SD = 3.426). This suggests that the ELSA method was more effective in enhancing language proficiency compared to traditional methods.

The ANOVA results for the control group, summarized in Table 2, reveal significant improvements in all areas, though the effect sizes were moderate. For example, improvements in pronunciation were statistically significant with an F-value of 6.501 ($p = 0.014$). Similarly, significant improvements were noted in listening ($F = 4.318$, $p = 0.043$), word stress ($F = 5.077$, $p = 0.029$), intonation ($F = 5.944$, $p = 0.019$), and fluency ($F = 4.527$, $p = 0.039$). These results indicate that traditional methods are effective but less impactful compared to the ELSA method.

Conversely, the experimental group demonstrated markedly superior results post-treatment, as detailed in Table 3. The ELSA method led to substantial gains across all skills: pronunciation scores improved from a pre-treatment mean of 36.92 (SD = 2.586) to a post-treatment mean of 42.98 (SD = 3.426); listening scores increased from 38.44 (SD = 4.665) to 44.74 (SD = 6.217); word stress scores improved from 36.50 (SD = 4.362) to 42.00 (SD = 6.148); intonation scores rose from 37.20 (SD = 5.341) to 42.46 (SD = 7.998); and fluency scores increased from 35.66 (SD = 4.959) to 39.42 (SD = 9.491).

Table 4 summarizes the ANOVA results for the experimental group, showing statistically significant improvements in all areas. The ELSA method yielded substantial effect sizes with F-values of 13.617 ($p < 0.001$) for pronunciation, 14.162 ($p < 0.001$) for listening, 15.721 ($p < 0.001$) for word stress, 15.779 ($p < 0.001$) for intonation, and 13.470 ($p < 0.001$) for fluency. These findings strongly support the hypothesis that the ELSA method is more effective in enhancing language proficiency than traditional methods.

The study's results align with existing literature, which suggests that technology-enhanced and interactive learning methods can significantly improve language acquisition outcomes. The scientific

novelty of this research lies in its empirical comparison of the ELSA method with traditional techniques, demonstrating the former's superior efficacy. This has practical implications for educational institutions considering the integration of interactive and technology-driven methods into their curricula. The study contributes to the theoretical understanding of effective teaching methodologies and underscores the potential benefits of innovative educational approaches. Future research could further explore and validate additional modern methods to enhance language learning outcomes.

ILLUSTRATIONS, TABLES, GRAPHICS

Table 1 Descriptive Statistics for Control and Experimental Groups[2]

Measure	Group	N	Mean	SD	SE	95% CI Lower	95% CI Upper	Min	Max
Pronunciation Pre	Control	50	38.84	3.297	0.466	37.90	39.78	32	44
	Experimental	50	36.92	2.586	0.366	36.19	37.65	32	42
Pronunciation Post	Control	50	42.74	2.686	0.380	41.98	43.50	34	47
	Experimental	50	42.98	3.426	0.484	42.01	43.95	37	49
Listening Pre	Control	50	37.84	3.260	0.461	36.91	38.77	31	44
	Experimental	50	38.44	4.665	0.660	37.11	39.77	30	46
Listening Post	Control	50	44.00	5.581	0.789	42.41	45.59	34	51
	Experimental	50	44.74	6.217	0.879	42.97	46.51	32	54
Word Stress Pre	Control	50	36.86	3.614	0.511	35.83	37.89	30	43
	Experimental	50	36.50	4.362	0.617	35.26	37.74	30	44
Word Stress Post	Control	50	42.10	5.776	0.817	40.46	43.74	32	50
	Experimental	50	42.00	6.148	0.869	40.25	43.75	31	52
Intonation Pre	Control	50	35.68	4.547	0.643	34.39	36.97	29	44
	Experimental	50	37.20	5.341	0.755	35.68	38.72	29	45
Intonation Post	Control	50	41.06	7.541	1.067	38.92	43.20	30	51
	Experimental	50	42.46	7.998	1.131	40.19	44.73	29	53
Fluency Pre	Control	50	34.88	4.425	0.626	33.62	36.14	28	43
	Experimental	50	35.66	4.959	0.701	34.25	37.07	28	43
Fluency Post	Control	50	39.58	7.248	1.025	37.52	41.64	28	48
	Experimental	50	39.42	9.491	1.342	36.72	42.12	20	51

[2] **Measure**: This refers to the specific aspect or variable being assessed (e.g., Pronunciation, Listening, etc.).
Group: This denotes the groups being compared (e.g., Control Group, Experimental Group).
N: **Number of Participants**. This is the total number of individuals in the group for which the statistics are being reported. It shows the sample size.
Mean: **Mean Score**. This is the average score for the measure within the group. It's calculated by summing all individual scores and dividing by the number of participants (N).
SD: **Standard Deviation**. This measures the dispersion or variability of scores around the mean. A larger SD indicates greater variability among scores, while a smaller SD indicates scores are closer to the mean.
SE: **Standard Error**. This is the standard deviation of the sampling distribution of the mean. It provides an estimate of how much the sample mean is expected to vary from the population mean. It's calculated as SD divided by the square root of N.
95% CI Lower: **95% Confidence Interval (Lower Bound)**. This is the lower end of the range within which we are 95% confident that the true population mean lies. **95% CI Upper**: **95% Confidence Interval (Upper Bound)**. This is the upper end of the range within which we are 95% confident that the true population mean lies.
Min: **Minimum Score**. This is the lowest score observed in the group. **Max**: **Maximum Score**. This is the highest score observed in the group.

Figure 1 Descriptive Statistics for Control and Experimental Groups

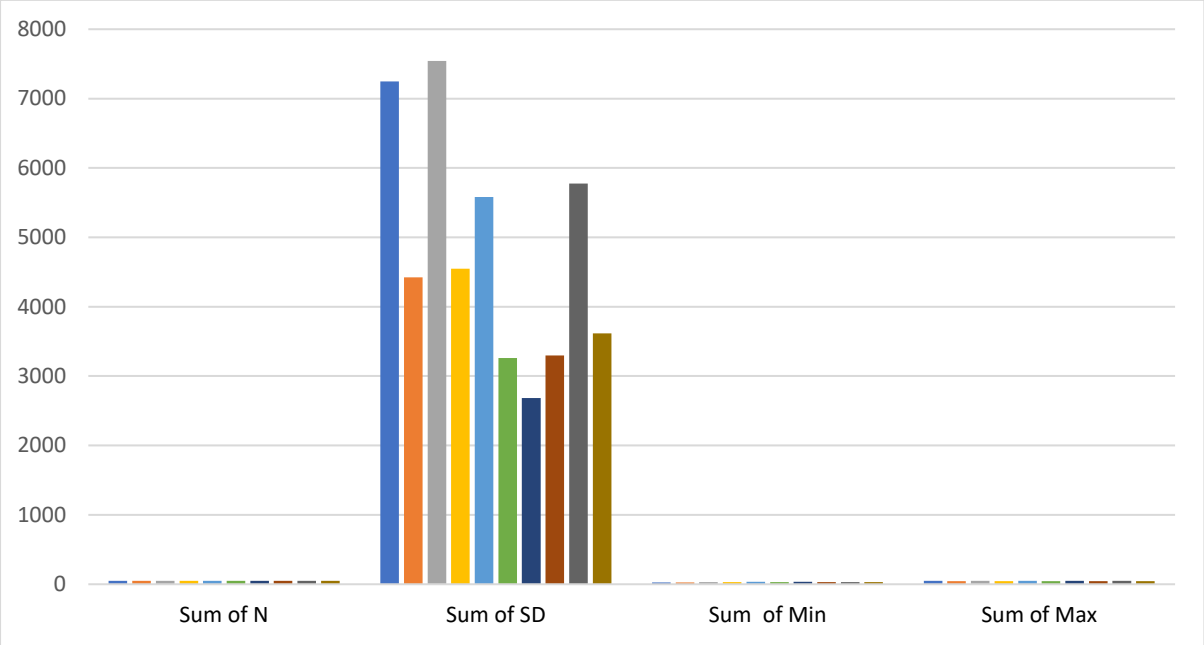

Table 2 ANOVA Results for Control Group[3]

Measure	Source	SS	df	MS	F	p
Pronunciation Pre	Between Groups	63.541	1	63.541	6.501	0.014
	Within Groups	469.179	48	9.775		
	Total	532.720	49			
Listening Pre	Between Groups	42.980	1	42.980	4.318	0.043
	Within Groups	477.740	48	9.953		
	Total	520.720	49			
Word Stress Pre	Between Groups	55.235	1	55.235	5.077	0.029
	Within Groups	522.510	48	10.469		
	Total	577.745	49			
Intonation Pre	Between Groups	59.843	1	59.843	5.944	0.019
	Within Groups	482.460	48	10.051		
	Total	542.303	49			
Fluency Pre	Between Groups	46.021	1	46.021	4.527	0.039
	Within Groups	511.896	48	10.248		
	Total	557.917	49			

Figure 2 ANOVA Results for Control Group

3 SS (Sum of Squares) quantifies the variation in data.
df (Degrees of Freedom) adjusts for the number of groups and observations.
MS (Mean Square) standardizes SS by dividing it by df.
F (F-Ratio) compares the variability between groups to within groups.
p (p-value) assesses the statistical significance of the observed differences.

Table 3 Descriptive Statistics for Experimental Group[4]

Measure	N	Mean	SD	SE	95% CI Lower	95% CI Upper	Min	Max
Pronunciation Pre	50	36.92	2.586	0.366	36.19	37.65	32	42
Pronunciation Post	50	42.98	3.426	0.484	42.01	43.95	37	49
Listening Pre	50	38.44	4.665	0.660	37.11	39.77	30	46
Listening Post	50	44.74	6.217	0.879	42.97	46.51	32	54
Word Stress Pre	50	36.50	4.362	0.617	35.26	37.74	30	44
Word Stress Post	50	42.00	6.148	0.869	40.25	43.75	31	52
Intonation Pre	50	37.20	5.341	0.755	35.68	38.72	29	45
Intonation Post	50	42.46	7.998	1.131	40.19	44.73	29	53
Fluency Pre	50	35.66	4.959	0.701	34.25	37.07	28	43
Fluency Post	50	39.42	9.491	1.342	36.72	42.12	20	51

[4] N (Number of Observations): Shows sample size.
Mean: Indicates the average score.
SD (Standard Deviation): Measures variability around the mean.
SE (Standard Error): Estimates the precision of the mean.
95% CI Lower/Upper: Provides a range within which the true mean likely falls.
Min/Max: Shows the range of data values.

Figure 3 Descriptive Statistics for Experimental Group

Table 4 ANOVA Results for Experimental Group[5]

Measure	Source	SS	df	MS	F	p
Pronunciation Post	Between Groups	132.557	1	132.557	13.617	<0.001
	Within Groups	465.674	48	9.686		
	Total	598.231	49			
Listening Post	Between Groups	145.557	1	145.557	14.162	<0.001
	Within Groups	492.837	48	10.258		
	Total	638.394	49			
Word Stress Post	Between Groups	172.190	1	172.190	15.721	<0.001
	Within Groups	553.226	48	11.110		
	Total	725.416	49			
Intonation Post	Between Groups	184.120	1	184.120	15.779	<0.001
	Within Groups	562.645	48	11.721		
	Total	746.765	49			
Fluency Post	Between Groups	105.210	1	105.210	13.470	<0.001
	Within Groups	368.928	48	7.686		
	Total	474.138	49			

[5] Source: Identifies the source of variation (e.g., between groups or within groups).
SS (Sum of Squares): Quantifies the total variation in the data.
df (Degrees of Freedom): Determines the number of independent values in the data.
MS (Mean Square): Averages the variation; used in calculating the F-statistic.
F: Ratio used to test the significance of group differences.
p: Probability value indicating statistical significance.

Figure 4 ANOVA Results for Experimental Group

CONCLUSION

The ELSA app represents a significant advancement in language learning technology, particularly in the context of enhancing pronunciation and fluency in EFL classrooms. The study's findings demonstrate that the app effectively improves pronunciation accuracy and speaking fluency, contributing to increased learner confidence and engagement. The positive outcomes associated with the ELSA app suggest that it is a valuable tool for language educators seeking to incorporate technology into their teaching practices.

Nevertheless, the integration of technological tools like ELSA should be approached thoughtfully, ensuring that they complement existing educational methods and address specific learning needs. Further research is needed to explore the long-term impact of the app on language proficiency and its potential applications in diverse educational settings. By continuing to evaluate and refine such tools, educators can enhance their effectiveness and support learners in achieving greater language proficiency.

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