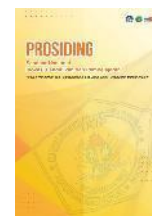




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Improving Pronunciation Skills Through the Use of "Stimuler" Application Among Second Semester English Department Students at IKIP PGRI Bojonegoro

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abstrak—Pronunciation merupakan salah satu keterampilan penting dalam pembelajaran bahasa Inggris karena berperan dalam keberhasilan komunikasi lisan. Namun, banyak mahasiswa masih mengalami kesulitan dalam mengucapkan bunyi bahasa Inggris secara tepat akibat perbedaan sistem bunyi bahasa ibu dan kurangnya latihan yang intensif. Penelitian ini bertujuan untuk mengetahui efektivitas penggunaan aplikasi berbasis Artificial Intelligence (AI) bernama Stimuler dalam meningkatkan kemampuan pronunciation mahasiswa semester dua Program Studi Pendidikan Bahasa Inggris IKIP PGRI Bojonegoro. Penelitian ini menggunakan pendekatan kuantitatif dengan desain pre-experimental berupa one-group pre-test and post-test design. Data dikumpulkan melalui tes pronunciation yang diberikan sebelum dan sesudah perlakuan. Aspek yang dinilai meliputi accuracy, intonation, stress and rhythm, serta fluency. Data dianalisis menggunakan perhitungan rata-rata dan uji paired sample t-test. Hasil penelitian menunjukkan adanya peningkatan kemampuan pronunciation mahasiswa setelah menggunakan aplikasi Stimuler. Peningkatan terlihat pada ketepatan pengucapan, intonasi, kelancaran berbicara, serta berkurangnya kesalahan bunyi segmental. Hasil uji statistik menunjukkan nilai signifikansi (p -value) $< 0,05$, yang mengindikasikan adanya perbedaan signifikan antara nilai pre-test dan post-test. Dengan demikian, aplikasi Stimuler terbukti efektif dalam meningkatkan kemampuan pronunciation mahasiswa dan dapat digunakan sebagai alternatif media pembelajaran berbasis AI di perguruan tinggi.

Kata kunci—Pronunciation Skills, Artificial Intelligence, Stimuler Application, English Learning, EFL Students

Abstrak—Pronunciation is an important skill in English learning because it plays a role in successful oral communication. However, many students still experience difficulties in pronouncing English sounds correctly due to differences in the sound system of their native language and a lack of intensive practice. This study aims to determine the effectiveness of using an Artificial Intelligence (AI)-based application called Stimuler in improving the pronunciation skills of second-semester students of the English Language Education Study Program at IKIP PGRI Bojonegoro. This study used a quantitative approach with a pre-experimental design in the form of a one-group pre-test and post-test design. Data were collected through pronunciation tests administered before and after the treatment. Aspects assessed included accuracy, intonation, stress and rhythm, and fluency. Data were analyzed using average calculations and paired sample t-tests. The results showed an increase in students' pronunciation skills after using the Stimuler application. Improvements were seen in pronunciation accuracy, intonation, fluency, and a reduction in segmental sound errors. The statistical test results showed a significance value (p -value) < 0.05 , indicating a significant difference between the pre-test and post-test scores. Thus, the Stimuler application has proven effective in improving students' pronunciation skills and can be used as an alternative AI-based learning media in higher education.

Keywords—Pronunciation Skills, Artificial Intelligence, Stimuler Application, English Learning, EFL Students

PENDAHULUAN

Pronunciation skills are a crucial aspect of English learning because they directly influence successful oral communication. This skill encompasses the accuracy of segmental and suprasegmental sounds, such as intonation, stress, and rhythm. However, in practice, many English learners still struggle to master proper pronunciation, often leading to misunderstandings in communication.

These pronunciation problems are also found among students in English Language Education programs, especially at the beginning level. Several studies have shown that these difficulties are generally related to differences in the sound systems of the native language and the target language, a lack of intensive practice, and a lack of appropriate feedback during the learning process. Yulianti et al. (2025) revealed that EFL learners still face various challenges in mastering English segmental sounds, which impact pronunciation quality. This indicates that pronunciation learning remains a challenge that requires more serious attention in the English language learning process in higher education. Pronunciation skills are a crucial aspect of English learning because they directly influence successful oral communication. This skill encompasses the accuracy of segmental and suprasegmental sounds, such as intonation, stress, and rhythm. However, in practice, many English learners still struggle to master proper pronunciation, often leading to misunderstandings in communication.

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On the other hand, the development of digital technology has opened up new opportunities in language learning. The use of technology-based media such as mobile learning applications and Artificial Intelligence (AI) is increasingly being used to improve speaking and pronunciation skills. Research by Yusuf (2020) shows that the use of computer-based media can improve English learning outcomes, particularly in pronouns. Furthermore, Hastawan et al. (2023) emphasized that the development of Android-based digital learning applications can provide a more interactive and effective learning experience for students. Similarly, Mentari (2025) also explained that students have a positive perception of the use of AI in English learning because it helps increase engagement and learning effectiveness.

One technological innovation used in pronunciation learning is the "Stimuler" application, an AI-based application designed to train speaking skills through interactive exercises and automated feedback. Research by Nugraha et al. (2025) shows that AI-based programs such as "Speaking with Stimuler" can help improve students' English speaking skills through structured, technology-based training. Furthermore, the use of AI in speaking learning is also considered capable of increasing students' self-confidence and learning consistency (Ridwan, 2025).

Although various studies have demonstrated the effectiveness of digital media and AI in English language learning, studies specifically examining the use of the Stimuler app to improve pronunciation skills in first-semester students in the English Language Education study program at IKIP PGRI Bojonegoro are still limited. Most previous research has focused on speaking skills in general or at the secondary school level, rather than on pronunciation specifically in the university environment.

Furthermore, pronunciation is not only related to the ability to produce sounds accurately, but also plays an essential role in developing overall speaking competence. According to Atli and Bergil (2012), pronunciation instruction contributes significantly to students' speaking performance because clear pronunciation enables learners to convey messages effectively and confidently. Students with better pronunciation tend to communicate more fluently and experience fewer misunderstandings during interaction. Therefore, pronunciation should be considered a fundamental component of English language instruction rather than merely a supplementary skill.

In addition, motivation and learner engagement are important factors that influence the success of pronunciation learning. Purnama and Nurdianingsih (2019) explained that learning activities that encourage active participation can increase students' motivation and improve language performance. When learners are actively involved in practicing language skills, they become more confident and willing to communicate in English. This indicates that pronunciation learning requires not only appropriate instructional materials but also learning environments that support continuous practice and interaction.

Moreover, the integration of digital technology into language learning has transformed the way students practice English skills. Digital platforms provide opportunities for learners to access learning materials anytime and anywhere, allowing for more flexible and autonomous learning experiences. Tirtanawati and Salsabila (2021) found that technology-mediated learning environments facilitate communication, collaboration, and language practice among students. Such findings suggest that technology can serve as an effective medium for supporting pronunciation development through repeated exposure and practice opportunities.

Recent studies have also highlighted the growing role of Artificial Intelligence (AI) in English language education. AI-powered applications are capable of providing immediate feedback, personalized learning experiences, and adaptive exercises that meet learners' individual needs. Shakira et al. (2026) reported that the use of the Stimuler application supports students' English speaking development by offering interactive activities and real-time pronunciation assessment. These features allow learners to identify and correct their pronunciation errors independently, making the learning process more efficient and learner-centered.

Given this research gap, this study is crucial to determine the effectiveness of the "Stimuler" app in improving pronunciation skills in second-semester students in the English Language Education study program at IKIP PGRI Bojonegoro.

RESEARCH METHOD

This study employed a quantitative approach with a survey method. This design was chosen to measure the relationship and influence between the independent variable (use of the Stimuler application) and the dependent variable (pronunciation ability) through numerical data analyzed statistically. The population was all second-semester students of the English Education Study Program at IKIP PGRI Bojonegoro. The sample was selected using purposive sampling technique with the following criteria: (1) second-semester students, (2) enrolled in speaking-related courses, (3) had used the Stimuler application, and (4) were willing to participate. The total sample obtained was 63 students. The main instrument was a questionnaire consisting of 20 statements using a Likert scale (1–5). The questionnaire covered aspects of frequency of use, perceptions of application features, and perceived improvement in pronunciation. Before use, the instrument was tested for content validity using Aiken's V (value = 0.775 – high category) and reliability using Cronbach's Alpha (α = 0.845 – excellent). Data were analyzed through: (1) descriptive statistics, (2) prerequisite tests (normality, linearity), (3) simple linear regression, (4) t-test, and (5) coefficient of determination (R^2). All analyses were conducted using SPSS version 27.0.

RESULTS AND DISCUSSION

Normality Test

Based on the One-Sample Kolmogorov–Smirnov Test, the significance value (Asymp. Sig. = 0.200) is greater than 0.05. Therefore, the residuals are normally distributed, indicating that the normality assumption has been met and the regression analysis is valid for hypothesis testing.

Table 1. Results of the normality test

Normality Test	Point
Sample size (N)	63
Asymp. Sig. (2-tailed)	0,200
Monte Carlo Sig. (2-tailed)	0,372
Decision	Normally distributed data

Linearity Test

Table 2. Linearity test results

Variable Relationship	F	Sig.	Interpretation
Linearity	87,676	<0,001	Linear
Deviation from Linearity	0,721	0,777	No significant deviation from linearity

The linearity test showed a significance value of 0.777 for the Deviation from Linearity, which is greater than 0.05. Therefore, the relationship between the Stimuler Application and Pronunciation Ability variables is linear, indicating that the linearity assumption has been satisfied.

Simple Linear Regression Analysis

The results of the simple linear regression analysis are presented in the following table:

Table 3. Results of Simple Linear Regression Analysis

Variable	B	Beta	t	Sig.
Constant	11.971	–	5.364	<0.001
Stimuler Application	0.632	0.782	9.799	<0.001

The simple linear regression analysis produced the equation $Y = 11.971 + 0.632X$. The positive regression coefficient (0.632) indicates that each one-unit increase in the Stimuler Application score increases students' pronunciation ability by 0.632 points. This shows a positive relationship between the Stimuler Application and pronunciation ability.

T – test

Table 4. Results of T-test

Variable	t	Sig.
Constant	5.364	<0.001
Stimuler Application	9.799	<0.001

The hypothesis test showed that t-count (9.799) was greater than t-table (1.670), with a significance value of < 0.001 . Therefore, H_0 was rejected and H_1 was accepted, indicating that the Stimuler Application has a positive and statistically significant effect on the pronunciation ability of second-semester students in the English Education Study Program at IKIP PGRI Bojonegoro.

Coefficient Determinasi

The results of the coefficient of determination analysis are presented as follows:

Table 5. Results of the Coefficient of Determination Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.782	0.611	0.605	2.848

Based on the Model Summary, the R Square value of 0.611 indicates that the Stimuler Application explains 61.1% of the variance in students' pronunciation ability, while the remaining 38.9% is influenced by other factors. The Adjusted R Square value of 0.605 suggests that the regression model is stable and suitable for analysis.

DISCUSSION

The findings indicate that the Stimuler Application has a positive and significant effect on the pronunciation ability of second-semester students in the English Education Study Program at IKIP PGRI Bojonegoro. The simple linear regression analysis produced a positive regression coefficient ($B = 0.632$), while the hypothesis test showed that t-count (9.799) was greater than t-table (1.670) with a significance value of < 0.001 . In addition, the coefficient of determination ($R \text{ Square} = 0.611$) indicates that the Stimuler Application explains 61.1% of the variance in students' pronunciation ability.

These findings support the Mobile-Assisted Language Learning (MALL) theory, which suggests that mobile technology facilitates flexible, autonomous, and continuous language learning. Through AI-based speech recognition and instant feedback, the Stimuler Application enables students to identify pronunciation errors and improve their pronunciation through repeated practice, thereby enhancing their speaking performance.

The results are consistent with previous studies by Nugraha et al. (2025), Ridwan (2025), and Mentari (2025), which reported that AI-assisted learning applications improve English speaking skills, increase learners' confidence, and promote independent learning through immediate feedback. The interactive features of the Stimuler Application also motivate students to practice pronunciation more frequently outside the classroom.

Although the Stimuler Application proved effective, it should be used as a supplementary learning medium rather than a substitute for classroom instruction. Limitations such as dependence on internet access, possible inaccuracies in AI feedback, and limited opportunities for real-life communication should be considered. Overall, the findings suggest that integrating AI-assisted applications into English language learning is an effective strategy for improving students' pronunciation ability.

CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that there is a positive and significant effect of the use of the Stimuler application on the pronunciation ability of second-semester students of the English Education Study Program at IKIP PGRI Bojonegoro. The t-count value (9.799) > t-table (1.670) and the significance value < 0.001. The Stimuler application contributed 61.1% to the improvement of pronunciation ability, while the remaining 38.9% was influenced by other factors not examined in this study.

Suggestions that can be offered are: (1) Students are encouraged to use the Stimuler application more actively and independently; (2) Lecturers and the institution should consider integrating AI-based applications into the speaking curriculum; (3) Future researchers may use an experimental design (pre-test and post-test) and add other variables such as motivation, duration of use, or learning styles.

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