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The Effectiveness of Speechace Application in Enhancing EFL Learners' Speaking Skills: A Quasi-Experimental Study

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ABSTRACT

The pedagogical transformation of English language teaching in the digital era is characterized by the utilization of Artificial Intelligence (AI) and Automatic Speech Recognition (ASR). This study aims to evaluate the effectiveness of the Speechace application in enhancing students' speaking competence at Mr.Bob English Course through a quasi-experimental design. A total of 33 respondents were involved and divided into experimental and control groups to measure their pronunciation accuracy and fluency levels. Data collection instruments included oral performance tests (pre-test and post-test) and a learner autonomy questionnaire. The results of the Independent Samples T-test analysis showed a significant difference in mean scores between the two groups ($t = 3.88$; $p < .001$), with the experimental group demonstrating superior performance. These findings confirm that AI-based tools are capable of providing an autonomous and effective practice environment, while simultaneously serving as a solution to the limitations of personalized feedback within the context of EFL learning in Indonesia.

Keywords: Artificial Intelligence, Speechace, Pronunciation, Fluency, Learner Autonomy

1. Introduction

Speaking skills serve as the primary parameter for measuring the success of English language mastery among learners in Indonesia (Goh & Burns, 2019; Syafryadin et al., 2019). Nevertheless, the attainment of this competence is frequently hindered by limited face-to-face duration in the classroom, which prevents teachers from providing in-depth individual feedback (Brown & Abeywickrama, 2019). This phenomenon creates a gap between students' practical needs and the availability of instructors capable of precisely monitoring phonological development (Rafique et al., 2025). This situation is further exacerbated by the large class sizes often found in language centers, where individual speaking time is remarkably minimal (Harmer, 2022).

The integration of AI in language classrooms provides opportunities for students to engage in self-correction without social pressure (Qiao & Zhao, 2023). In line with this, recent research published in SINTA 3 journals emphasizes that the use of digital media not only assists with technical speaking aspects but is also crucial in reducing anxiety, which often hampers students' oral productivity (Nikmah & Zami, 2019). Furthermore, the main obstacles in speaking instruction within non-formal language institutions often relate to psychological factors, such as the fear of making pronunciation errors in public.

2. Literature Review

The Speechace application operates by analyzing the acoustic parameters of student speech and comparing them against native speaker databases through AI technology (Xiao, 2025). The primary advantage of this technology lies in its ability to provide instantaneous, purely data-driven feedback, which triggers phonological awareness in learners more rapidly than conventional methods (Kim, 2019).

Within the context of macro-skill development, the consistent utilization of AI also impacts the expansion of active vocabulary, as students are encouraged to repeat phrases until they achieve a specific standard of accuracy (Syafryadin et al., 2019). Beyond the cognitive aspects, this technology reinforces the affective dimension of learner autonomy, where students maintain full control over their own learning pace and self-evaluation (Hasumi & Chiu, 2024; Qiao & Zhao, 2023).

3. Method

3.1 Research Design and Participants

This study employed a quantitative methodology with a Quasi-Experimental design. The research site was purposively selected at Mr.Bob English Course, involving a total of 33 respondents. These participants were allocated into two distinct groups: the experimental group, which integrated the Speechace application into their learning process, and the control group, which followed conventional instructional patterns. This approach was adopted to observe the impact of the intervention variables within a natural yet controlled educational setting (Creswell & Creswell, 2023).

3.2 Instrument Adaptation and Validation

Data were gathered through oral speaking performance tests (pre-test and post-test) and a learner autonomy questionnaire. The existing instruments were adapted to align the content with the local Indonesian cultural context and the proficiency levels of the students at Mr.Bob English Course. This step was vital to ensure that the instruments were not only content-valid but also sociolinguistically relevant to the respondents. Prior to the primary data collection phase, a pilot study was conducted to independently verify the validity and reliability of the instruments, ensuring the consistency of the measurement results (Pallant, 2020).

3.3 Advantages of the Testing Instrument

The implementation of performance-based testing in this study offers several strategic advantages:

- Authenticity: It directly measures students' oral abilities within a real-world communicative context.
- Diagnostic Precision: The use of analytical rubrics allows for the specific identification of weaknesses in pronunciation.
- Measurement Effectiveness: The pre-test and post-test design provides accurate longitudinal data regarding the effectiveness of the treatment.

3.4 Data Analysis

The final data were processed using inferential statistics. A Paired-Samples T-Test was utilized to observe the internal improvement within each group, while an Independent Samples T-Test was applied to examine the significance of the mean score differences between the two groups (Field, 2018; Pallant, 2020).

4. Result and Discussion

Result

4.1 Descriptive Statistics of Research Results

This section presents the descriptive data obtained from the speaking performance test scores involving 33 respondents. The participants were divided into an experimental group (N=17), which utilized the Speechace application, and a control group (N=16), which followed conventional methods. A summary of the descriptive statistical data for the final scores (post-test) is presented in Table 1 below:

Table 1. Descriptive Statistics of Pre-Test and Post-Test Scores

GROUP	N	Mean	Std. Deviation	Std. Error Mean
EXPERIMENT	17	5.75	0.46	**0.11**
CONTROL	16	5.07	0.54	**0.14**

Based on Table 1, the score distribution indicates variations in students' oral competence achievement following the intervention. The application of descriptive statistics is crucial for providing an initial overview of the respondents' proficiency levels post-treatment (Field, 2018). The increase in the mean score for the experimental group reached 5.75, which is theoretically influenced by the availability of instantaneous feedback from AI technology that triggers learners' phonological awareness (Kim, 2019). Conversely, the control group exhibited a lower mean score of 5.07, a finding that aligns with the theory that limited face-to-face classroom time often restricts the duration of individual practice for each student (Harmer, 2022).

4.2 Hypothesis Testing (Independent Samples T-Test)

Following the presentation of the descriptive data, the subsequent crucial step was to test the hypothesis to determine whether the effectiveness of the Speechace application was statistically proven. The researcher employed an Independent Samples T-Test to compare the final achievements between the experimental and control groups. The results indicated a significance value (2-tailed) of $p < .001$, which is well below the 0.05 threshold. This confirms that there is a highly significant difference in the speaking abilities of students who utilized AI assistance compared to those taught through conventional methods.

Table 2. Comparison of Speaking Scores Between Groups

Condition	t	df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	3.88	31	<.001	**0.68**

(Source: Processed SPSS Data, 2026)

The data in Table 2 reveals a t-value of 3.88 with a Mean Difference of 0.68. These figures are not merely statistical indicators but serve as evidence that the integration of ASR technology provides a significant advantage for learners in achieving better pronunciation accuracy. This finding is also consistent with the argument that instantaneous AI feedback assists students in independently identifying phonological errors without waiting for their turn from instructors in crowded classroom settings. Consequently, the research hypothesis is accepted, stating that the integration of Speechace exerts a significant positive impact on students' speaking skills.

4.3 Analysis of Learner Autonomy and Instrument Reliability

In addition to measuring oral performance, this study evaluated the affective dimension of student learner autonomy through a questionnaire. Prior to data analysis, a reliability test was conducted to ensure the consistency of the measurement instrument. The results of the reliability test using McDonald's Omega (ω) coefficient are presented in Table 3:

Table 3. Reliability Statistics of Learner Autonomy Instrument

Coefficient	Estimate	Std. Error	95% CI (Lower - Upper)
McDonald's (ω)	0.833	0.043	**0.749 – 0.918**

(Source: Processed SPSS Data, 2026)

Based on Table 3, the questionnaire instrument demonstrates a coefficient value of 0.833. Referring to statistical criteria, a value above 0.70 indicates that the instrument possesses high reliability and is suitable for research data collection (Pallant, 2020).

The descriptive data show that the respondents achieved a mean learner autonomy score of 42.64 with a standard deviation of 4.821. Substantially, this achievement reflects that the utilization of the Speechace application provides space for students to take control of their own learning pace. The integration of AI facilitates a continuous self-assessment process, where students are encouraged to regulate their practice based on the automated feedback received, without full dependence on an instructor (Qiao & Zhao, 2023).

This reinforces the finding that technology is not merely a technical aid but a catalyst in shaping more independent learning behaviors within the EFL environment.

Discussion

The findings of this study consistently demonstrate that the integration of the Speechace application exerts a transformative impact on both the speaking proficiency and learner autonomy of students at Mr.Bob English Course. The significant advantage demonstrated by the experimental group through the Independent Samples T-Test (t = 3.88; p < .001) confirms that Automatic Speech Recognition (ASR) technology is capable of addressing instructional gaps that are difficult to overcome using conventional methods. In line with this, the instantaneous feedback provided by AI triggers learners' phonological awareness more rapidly, as they receive objective corrections without having to wait for their turn from instructors in crowded classroom settings.

Tangible evidence of this improvement in oral competence can be observed through the documentation of student activities within the Speechace application throughout the intervention period.

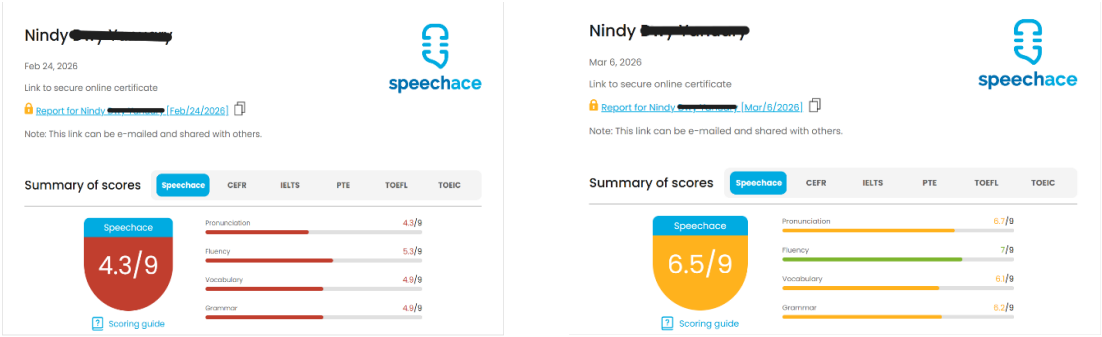

Figure 1. Comparison of Students' Pronunciation Scores on the Speechace Application (Session 1 and Session 7)

As illustrated in Figure 1, there is a clear transition in the respondents' phonological accuracy from the beginning to the end of the sessions. During the initial stage, the system frequently identified errors in specific vowel or consonant areas that are common among Indonesian EFL learners. However, through repetitive practice driven by the progressive scores from the application, the respondents were able to perform self-correction to achieve higher accuracy standards. This phenomenon proves that AI technology provides a "safe space" for students to experiment with their voices without the social pressure that often triggers speaking anxiety.

Furthermore, the significant improvement in learner autonomy, with a mean score of 42.64, explains why this intervention was sustainable. The self-assessment features within Speechace compel students to regulate their own learning pace based on objective data, ultimately fostering a sense of ownership over their own learning process. This reinforces that the success of the experimental group was not merely the result of technology exposure but rather the product of increased active engagement and student independence in autonomously monitoring their progress.

5. Conclusion

This study concludes that the integration of the Speechace application as an Artificial Intelligence (AI)-based learning medium significantly enhances the speaking competence of students at Mr.Bob English Course. Statistical analysis demonstrates a clear difference in achievement between the experimental and control groups (t = 3.88; p < .001), indicating that ASR technology provides a distinct advantage in phonological accuracy and oral fluency. Beyond technical improvements, the utilization of this application is proven to strengthen learner autonomy, as evidenced by a mean score of 42.64, where instantaneous feedback features facilitate a continuous self-evaluation process. Consequently, the utilization of AI in the English classroom serves not only as a technical aid but also as a catalyst for developing independent learner characteristics in the digital era.

Based on the research findings, it is suggested that English language education practitioners begin integrating AI-based applications to address the limitations of individual feedback duration in large-scale classrooms. For future researchers, it is recommended to expand the scope of the study by involving a larger

number of respondents or exploring the use of AI in other macro-skills, such as listening and writing. Furthermore, further studies are required to examine the long-term impact of ASR technology on students' speaking retention within the context of real-world communication outside the language center environment.

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APPENDICES

Appendix 1. Visual Documentation of Pronunciation Diagnostic Analysis on the Speechace Application

This section presents authentic evidence of a respondent's (Respondent N) oral competence development through the Speechace automated grading system. This data serves to support the statistical results by illustrating the transition in the respondent's pronunciation and fluency levels throughout the intervention period.

A. Initial Session Analysis Results (Session 1)

During the initial stage, the system provided a mean score of 4.3/9, indicating that the respondent was still at a developing level regarding phonological accuracy.

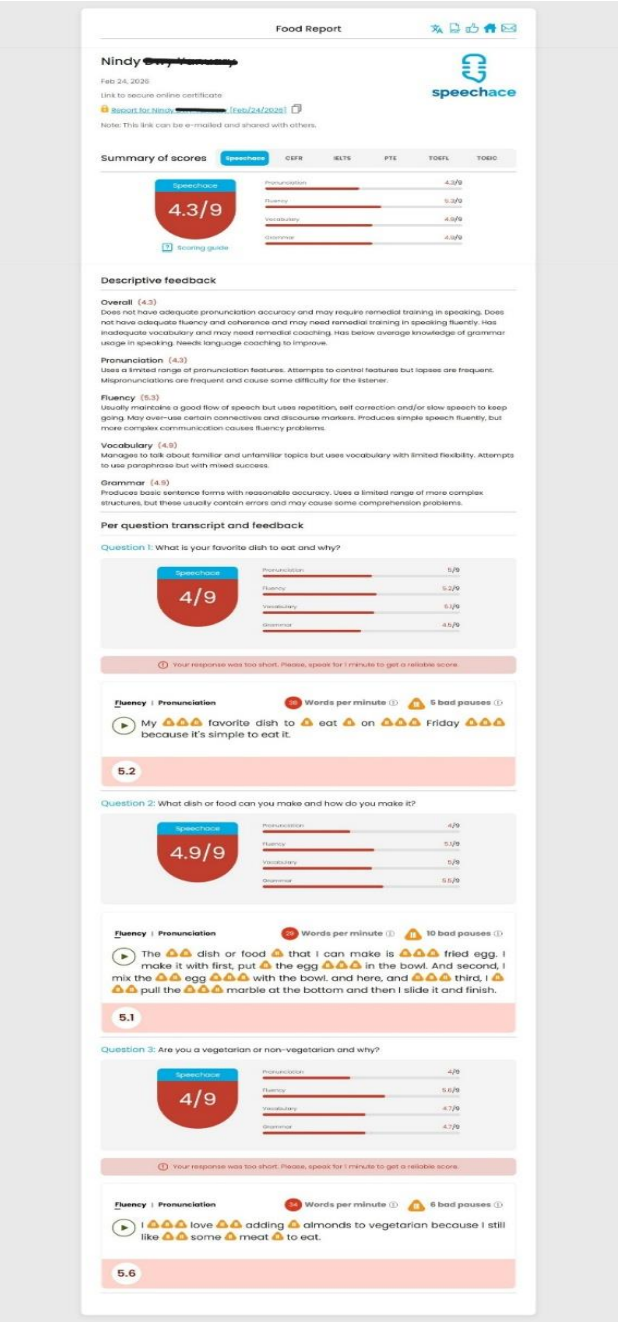

Figure 1. Diagnostic result from the initial session. The interface display illustrates the identification of specific phoneme errors and a relatively high frequency of pauses. This reflects common EFL learner obstacles in terms of fluency prior to AI technology exposure.

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B. Final Session Analysis Results (Session 7)

After undergoing seven intervention sessions with instantaneous feedback, the respondent demonstrated a significant improvement, achieving a mean score of 6.5/9.

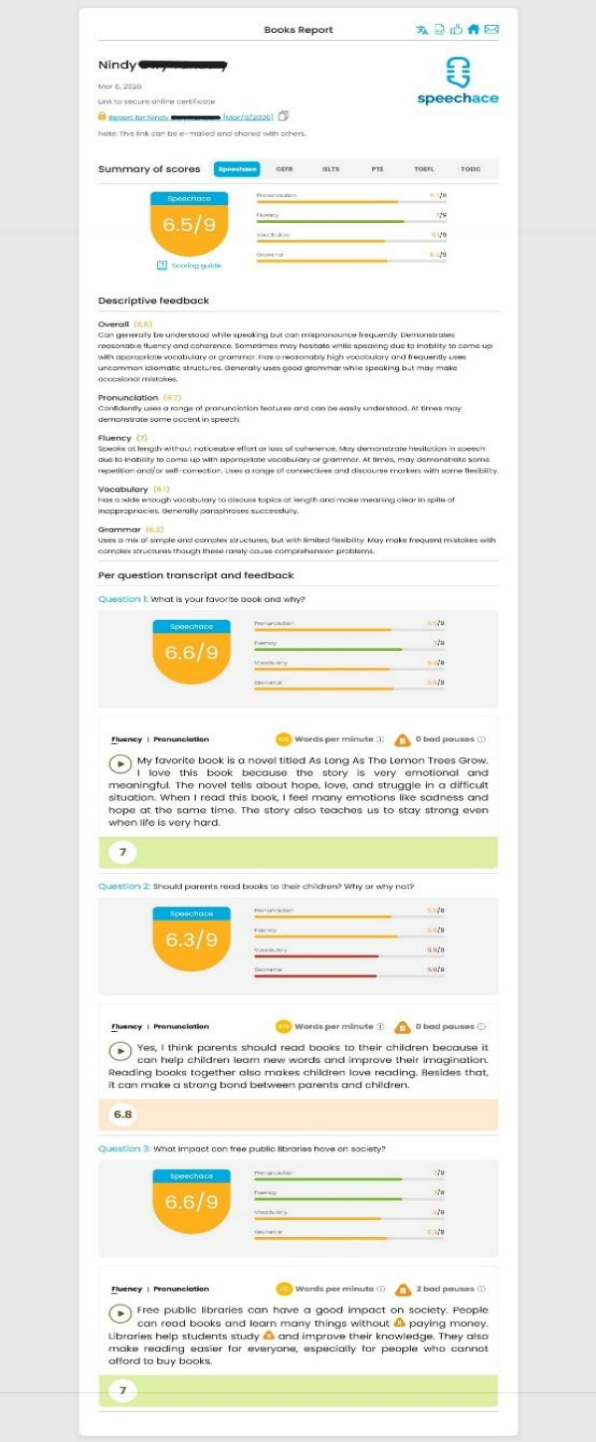

Figure 2 The screenshot above shows a drastic improvement in pronunciation and vocabulary aspects. The respondent was able to reduce the number of phonological errors through the self-correction features provided by the application, which directly resulted in enhanced learner autonomy.