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The Efficacy of AI-Powered Speech Recognition in Enhancing English Pronunciation for Second Language Learners.

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Abstract

This study examines the efficacy of the AI-powered speech recognition tool, *Say It Right*, in improving the English pronunciation of the ESL learners in Malaysia with different proficiency levels ranging from CEFR level A1 to level B2. The study included participants of different skill levels, who practiced with the tool for a semester. The tool offered immediate feedback and the results showed that feedback is an essential component for the changes in pronunciation. The findings showed that most of the learners noted that they had observed a great improvement in their pronunciation. The study found positive changes in learners' pronunciation, the general improvement indicates that longer term use and extra teaching intervention may be required for greater improvement. These results suggest the possibility of using AI-based tools in ESL education to enhance language acquisition. This study advances the knowledge of AI-based language learning technologies and instructional practices in ESL context and underscores the importance of incorporating such technologies in language learning.

Keywords: AI speech recognition, ESL learners, pronunciation improvement, personalized feedback, language education

1. Introduction

One of the most difficult tasks for ESL learners is to master the English pronunciation. Classroom learning is usually not very effective because there is not enough practice and individual feedback, which are critical for progress (Liu et al., 2019). These limitations can result in the consistent production of wrong pronunciation patterns, which affects the general communication development.

Liu et al (2019) claimed that the AI-based speech recognition technology can be considered as a solution to this problem since it can give instant feedback and practice can be done for a long time. Nevertheless, there is a lack of studies focusing on the effectiveness of AI-based speech recognition for enhancing the English pronunciation, especially in terms of user interest and individual learning.

This study will seek to fill this gap by assessing the impact of *Say It Right*, an AI tool developed by an Australian company known as Language Confidence, on the pronunciation of ESL learners in Malaysia. The tool then provides an audio for the students to listen to and then record themselves saying a particular phrase or sentence. It then gives feedback on the pronunciation of each of the phonemes. The research focuses on two objectives: (i) The first research question is related to the general improvement of pronunciation across different proficiency levels and (ii) the second research question is related to the role of the personalized feedback given by the tool in the improvement of pronunciation for each learner. The findings will be useful in designing better language learning technologies and instructional strategies in ESL education in Malaysia.

2. Methodology

This study assessed the effectiveness of the AI-based tool *Say It Right* in enhancing pronunciation among 398 ESL learners, which included university students and language center learners with different proficiency levels ranging from CEFR level A1 to level B2. The research was initiated in May 2024, and the data was collected from August 1st, 2024 to August 10th, 2024.

The participants were to complete four units of practice, which consisted of 5 to 10 sentences and phrases. They used the tool 2 to 3 times a week and got immediate feedback on pronunciation, intonation, and fluency. This made it easier for them to monitor their performance and enhance their pronunciation.

Participants completed an online survey using Google Forms to indicate how frequently they used the tool, if they noticed an improvement in their pronunciation, and if the feedback was useful. The survey was used to collect quantitative data for the purpose of analysis.

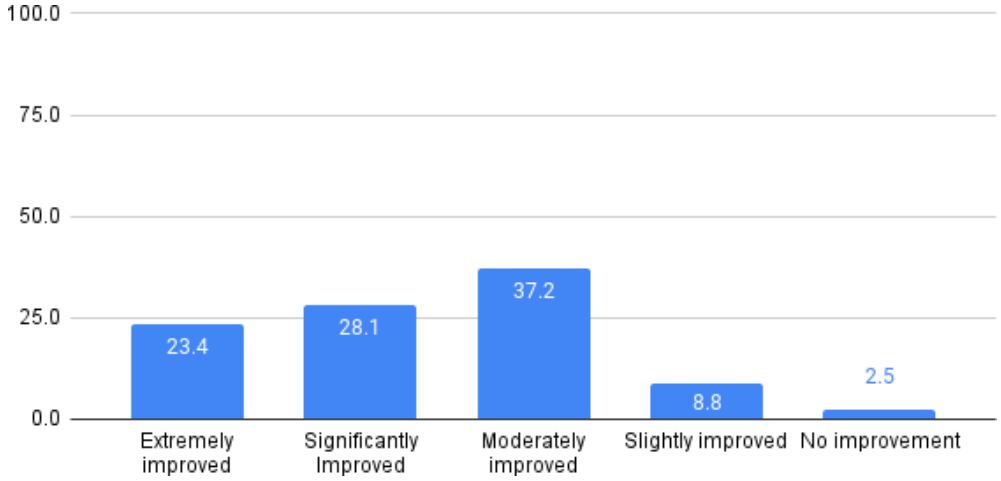
The researchers evaluated the rate of improvement by calculating the percentage of progress (out of 100%) over a semester, while the student survey showed how often students engaged with the tool and their perceptions of the tool and its feedback. These responses were then used to determine the trends in improvement, engagement, and satisfaction with the tool. The results were then employed to evaluate the effectiveness of *Say It Right* in improving pronunciation and its contribution to the overall learning process of the students, with emphasis on the significance of individualized feedback in the context of ESL pronunciation.

Findings

The survey conducted with 398 participants who employed the AI-based speech recognition application called *Say It Right* shows the improvement of their English pronunciation. According to the Google Form responses:

- 23.4% of students reported that their pronunciation was "Extremely improved."
- 28.1% felt it was "Significantly improved."
- 37.2% noted "Moderate improvement."
- 8.8% observed "Slight improvement."
- Only 2.5% of participants reported "No improvement."

Chart 1: Student-Reported Improvement in English Pronunciation Using Say It Right How much do you feel your pronunciation has improved since you started using Say It Right?

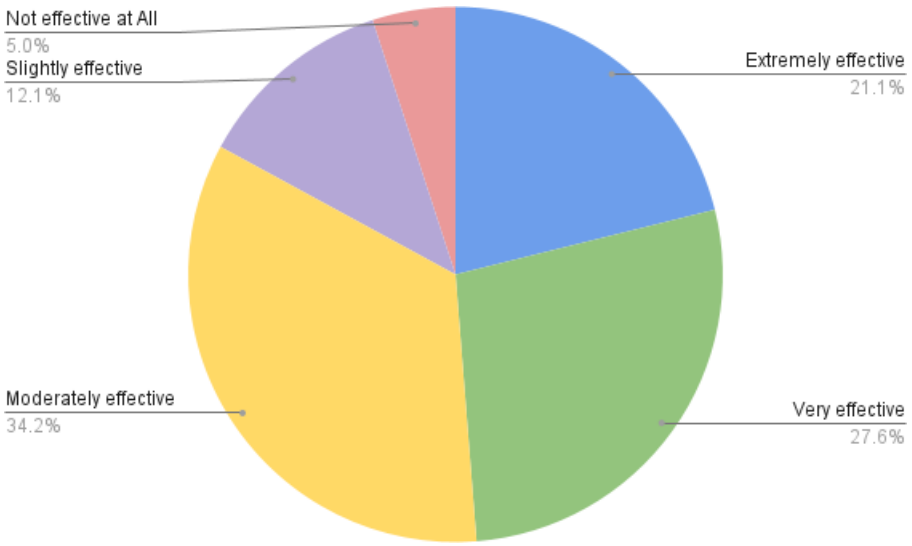


When evaluating the personalized feedback's effectiveness, the responses were similarly positive:

- 21.1% of students found the tool to be "Extremely effective."
- 27.6% rated it as "Very effective."
- 34.2% considered it "Moderately effective."
- 12.1% thought it was "Slightly effective."
- 5.0% felt the tool was "Not effective at all."

Chart 2: Effectiveness Ratings of Say It Right by Students

How effective was the feedback from Say It Right in helping you improve your pronunciation?



In a more detailed analysis, 50 were chosen from the 398 students to determine their level of improvement within the semester. The findings revealed that the average rate of improvement was 3.42% in their pronunciation scores, which were obtained out of 100% depending on how accurately the students pronounced the words that were given to them.

Discussion

The findings show that the majority of students had a high level of pronunciation gains after using the AI-based application, 88.7% reporting at least moderate improvement. This indicates that *Say It Right* is useful in the improvement of pronunciation for the ESL learners.

The positive shifts in perceived progress and effectiveness ratings suggest that the tool's real-time feedback and practice sessions play a significant role in these improvements. However, the 11.3% of students who reported slight or no improvement may be influenced by individual factors such as motivation, prior knowledge, or learning styles, which could impact the tool's overall effectiveness.

An average improvement rate of 3.42% over the semester, even though small, is considerable because of the short time available for the study and the difficulty of the task of learning the English pronunciation. Such a gradual improvement shows that AI tools can help achieve small but consistent language learning improvements. However, the slight increase also indicates that the tool may require further assistance or that more significant results might emerge after prolonged use of the tool.

Overall, these results underscore the importance of incorporating AI-based speech recognition technologies such as *Say It Right* into ESL instruction. The fact that the tool is able to give feedback that

is specific to the individual, and is given on the spot, is the key factor in the enhancement of pronunciation, regardless of the level of the learner. Further research could be directed towards the adaptation of the tool for different types of learners and the effects of its use in the long term on the learners' language skills.

Conclusion

The study demonstrates the potential of AI-powered tools like *Say It Right* to enhance English pronunciation for ESL learners. With 88.7% of participants reporting at least moderate improvement, the tool's real-time feedback and personalized practice were helpful in achieving the goal. However, the modest average improvement of 3.42% suggests that continued use and additional support may be necessary for more substantial gains. The incorporation of such tools in ESL learning is promising for enhancing language learning.

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Reference

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