

EFL STUDENTS' PERCEPTIONS OF AI SPEECH RECOGNITION IN PRONUNCIATION PRACTICE: THE CASE OF GOOGLE READ ALONG

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Abstract: The study aimed to exploring students' perception of implementing AI Speech Recognition to facilitate students' pronunciation in EFL Students context. Quantitative and qualitative data were gained by applying a questionnaire and interviews. The study conducted at Non-English and English Study Program from four different Universities: Universitas Muhadi Setiabudi, Universitas Pancasakti Tegal, Universitas Pekalongan, and Universitas Jenderal Soedirman. Respondents in this study were 45 students from the English study program who joining the Pronunciation course and 75 non-English students who joining the English course. The result showed that students have positive perceptions of the use AI Speech Recognition in Google Read Along Application to facilitate English pronunciation learning. At the same time, students also stated that application's functionality may need to be supplemented with other learning tools for more comprehensive pronunciation training and the Google Read application would be more optimal if there was collaboration with the lecturer. In conclusion, the Google Read Along application is an effective tool for enhancing students' pronunciation skills and providing valuable feedback.

Keywords: *AI speech recognition; EFL students; google Read Along; pronunciation*

INTRODUCTION

Learning English as a Foreign Language (EFL) at the higher level in Indonesia is still faced with several problems such as lack of vocabulary mastery, pronunciation and lack of motivation or students learning interest Chand, 2021; Gusti et al., 2021). Pronunciation is a critical component of language proficiency, yet it is often one of the most difficult skills for EFL learners to master (Abdalla et al., 2020). Pronunciation remains a persistent challenge for EFL learners due to the lack of personalized feedback and practice opportunities (Sun, 2023a). Despite the integration of technology in language learning, many existing tools and methods fail to address the individual needs of learners, particularly in the area of pronunciation.

Pronunciation involves the correct articulation of sounds, the rhythm of speech, and intonation patterns that convey meaning (Ridho Khualid et al., 2024). These elements can vary greatly from a learner's native language, leading to difficulties in producing sounds that are not present in their

native language (Wahyuningsih & Afandi, 2020). For example, English contains certain sounds, such as the "th" in "this" or "thin," that may not exist in many other languages, leading to common pronunciation errors where these sounds are replaced with more familiar sounds from the learner's native language. Additionally, vowel sounds in English often vary greatly in pronunciation depending on context, causing confusion for learners whose native languages have more consistent vowel sounds (Cebrian et al., 2021).

Traditional classroom approaches often lack the resources to provide targeted, real-time feedback, leaving students with limited opportunities for consistent and effective practice. Traditional pronunciation teaching methods, such as drills and repetition, often lack the immediate and personalized feedback that learners need to effectively interpret errors (Nasim et al., 2022; Pennington, 2021). With the rise of Artificial Intelligence (AI) in education, AI-powered speech recognition technology offers a new approach to

addressing these challenges (Singh, 2023). While AI Speech Recognition (ASR) tools have emerged as a potential solution, research in this area remains insufficient. Most studies focus on general language learning technologies, neglecting the specific impact of ASR tools on pronunciation skills. Moreover, existing research often emphasizes advanced, less accessible platforms, which may not be suitable for younger or beginner-level learners. This highlights a critical gap in understanding how widely available and user-friendly ASR tools can be leveraged to improve pronunciation.

Recently the integration of Artificial Intelligence (AI) in language learning has transformed how educators and learners approach the acquisition of a new language (Hasibuan et al., 2023; Wei, 2023). Among the various applications of AI, speech recognition technology has emerged as a particularly powerful tool, especially for learners of English as a Foreign Language (EFL) (Dennis, 2024). This technology offers innovative solutions to one of the most challenging aspects of language learning: pronunciation. Speech Recognition improves overall language proficiency and communicative competence for ESL/EFL learners significantly (Choukaier, 2024; Rajendran & Md Yunus, 2021).

AI speech recognition technology has the potential to revolutionize pronunciation practice in EFL contexts by analyzing spoken language, comparing it to native speaker models, and providing real-time feedback (Djafar & Hamidah, 2024). One of the most significant benefits of this technology is its ability to offer immediate feedback, allowing learners to receive instant corrections on their pronunciation errors (Sun, 2023). This real-time feedback loop enables learners to make adjustments on the spot, leading to more effective and efficient learning outcomes (Mejeh & Rehm, 2024). Additionally, AI speech recognition systems can personalize learning experiences by adapting to the individual needs of each learner (Qin & Zhong, 2024). By tracking progress and identifying recurring pronunciation issues, the technology can tailor exercises to address specific problem areas, ensuring that learners receive the support they need to overcome their unique challenges. Furthermore, the interactive nature of AI-powered pronunciation tools enhance learner engagement by offering a dynamic and interactive learning experience, unlike traditional methods that can be repetitive and monotonous (Ajabshir, 2023). Features like gamification, scoring, and progress

tracking further motivate learners to practice regularly and achieve their pronunciation goals (Sari, Nisa, Listyanto, & Iskandar, 2023). Moreover, AI speech recognition tools are accessible across various digital platforms, providing learners with the flexibility to practice pronunciation at their own pace and convenience, anytime and anywhere, even outside of the classroom environment (Khider et al., 2023).

Educators have a multitude of opportunities to integrate AI speech recognition technology into their teaching strategies, enhancing the overall learning experience in diverse and impactful ways (Hlongwane et al., 2024). For instance, teachers can seamlessly incorporate AI-powered apps into their curriculum, using them to supplement classroom instruction by allowing students to engage in pronunciation practice both during and after lessons (Shoukat et al., 2024). These apps can serve as valuable tools for reinforcing concepts taught in class, providing students with additional practice opportunities that are tailored to their individual needs (Southwell et al., 2022). Furthermore, AI speech recognition technology can be utilized for assessment purposes, offering educators detailed insights into each student's progress (Yang et al., 2024). This data-driven approach enables teachers to identify specific areas where students may be struggling, allowing them to offer targeted interventions and support. By incorporating AI speech recognition into their teaching strategies, educators can create a more personalized and responsive learning environment that not only enhances students' pronunciation skills but also supports their overall language development (Ishaka Putra et al., 2023).

Development research on the SREDO application as an English learning media with object detection and speech recognition features conducted in elementary school learning shows that the level of usability of the SREDO learning media is very satisfying and acceptable. This application has proven to be very appropriate and effective in learning English by utilizing object detection and speech recognition technology (Setiawan et al., 2023). Other research on the use of ASR shows that the use of ASR is one way to help learners achieve language targets by providing authentic materials such as native speakers and providing direct correction and feedback in pronunciation exercises, this makes the learning atmosphere more interactive and interesting. Qualitative descriptive research conducted on the use of Google Voice in English learning shows that the integration of technology

in teacher- student interactions in the classroom makes the learning atmosphere more effective and efficient, helps teachers package learning to be more interactive and triggers students' interest in participating in learning (Muzdalifah, 2021).

Research related to the integration of technology in learning conducted using quantitative descriptive methods shows that the integration of technology in teacher- student interactions in the classroom makes the learning atmosphere more effective and efficient, helps teachers package learning to be more interactive and triggers students' interest in participating in learning (Basri et al., 2019; Khatoony & Nezhadmehr, 2020) Other research related to ASR in pronunciation learning at the university level shows that students feel more confident and improve their pronunciation skills and also feel an increase in motivation to learn English pronunciation using English pronunciation learning applications that use speech recognition technology (Anggraini, 2022).

Based on the literature review above, this study has differences and advantages that the use of the AI Speech Recognition feature in the Google Read Application Along with Learning English pronunciation not only utilizes technological advances but also integrates it with artificial intelligence (AI) in AI speech recognition technology. This is one of the innovations in the scope of educational technology so that interactive interactions do not only occur between lecturers and students but also the third component in learning, namely lecturers, students, and learning media, this is what makes the novelty in this research.

The research is guided by the following questions: (1) What are the perceptions and experiences of EFL students in using the Google Read application along with AI Speech Recognition for pronunciation learning?; (2) Can AI Speech Recognition in the Google Read Along application help overcome common mistakes in English pronunciation that are often made by EFL students?.

This study focuses on Google Read Along, an AI-driven application designed to enhance reading and pronunciation skills, particularly among young learners. With its accessibility, user-friendly interface, and affordability, Google Read Along has the potential to democratize language learning tools for EFL students. However, its effectiveness in addressing pronunciation challenges remains underexplored. By examining students' perceptions of its use, this study aims to

fill the gap in the literature and provide practical insights for educators and developers.

METHOD

The research design used in this research is a qualitative method, which was chosen to analyze the data obtained from the questionnaire. In addition, exploratory qualitative methods were applied to interview data to exploring broader and deeper information (Makri & Neely, 2021)

The research was carried out in the third semester of the non-English Education Program and in the five semesters of the English Education Program from four different University: Universitas Muhadi Setiabudi, Universitas Pancasakti Tegal, Universitas Pekalongan, and Universitas Jenderal Soedirman. The number of participants was 120 who were taken through disproportionate stratified random sampling because the population is stratified and not proportional (Makwana et al., 2023).

This study method, chosen to ensure the participation of EFL students who actively engage in English pronunciation practice. This method was deemed appropriate as it focuses on a relevant subgroup, specifically students with the motivation and experience necessary for utilizing AI-based technology such as Google Read Along. By selecting this sample, the study aims to gain in-depth insights into the effectiveness of the tool for the target population.

The intervention in this study was systematically designed to optimize the AI Speech Recognition feature of Google Read Along: The intervention consisted of 8 sessions, conducted over four weeks. Each session lasted 45 minutes. The types of Exercises: (1) Pronunciation drills; (2) Interactive reading tasks using stories within the app; (3) Error correction exercises guided by AI feedback. Google Read Along was integrated as the primary feedback mechanism. Participants read interactive stories in the app, and the AI provided immediate corrections and suggestions. This approach allowed for a personalized and adaptive learning experience.

Data collection was carried out through questionnaires and interviews to identify student responses after using AI Speech Recognition on the Google Read Along Application in Pronunciation. Before the author distributes it questionnaires and interviewing participants, they follow the teaching and learning process for four weeks using AI Speech Recognition. After completing the learning process, questionnaires were distributed to them.

To ensure the reliability and validity of the research instruments, the following steps were taken a pilot study was conducted with a smaller group of participants to evaluate the clarity and consistency of the questionnaire. Based on reliability testing on the questionnaire sent using SPSS, the result is that the Cronbach Alpha value is 0.981, which indicates that the statements is quite reliable.

Table 1. *Reliability of questionnaire items*

Cronbach's Alpha	Cronbach's Based on Standardized Items	Alpha	N of Items
.981		.982	12

Content validity was established through expert reviews involving language educators and AI specialists, ensuring that the questionnaire items were relevant to the research objectives.

Table 2. *Validity of questionnaires items*

Question number	r count	r table	Description
1	0.915	0.576	Valid
2	0.904	0.576	Valid
3	0.910	0.576	Valid
4	0.883	0.576	Valid
5	0.922	0.576	Valid
6	0.956	0.576	Valid
7	0.931	0.576	Valid
8	0.963	0.576	Valid
9	0.941	0.576	Valid
10	0.879	0.576	Valid
11	0.920	0.576	Valid
12	0.854	0.576	Valid

Based on validity testing on questionnaires sent using SPSS, the results are as follows the calculated r value $>$ r table based on a significance test of 0.05, meaning that the items mentioned above are valid.

Data analysis was carried out statistically for the results obtained from the questionnaire instrument, with the aim of calculating an average score that represents the overall views of the respondents. This statistical analysis process includes processing and calculating quantitative data from each questionnaire item, so that researchers can identify general trends or patterns in the answers given by the participants (Karunaratna et al., 2024). In addition, data obtained from interviews was analyzed descriptively, where each response was examined in depth to describe the views and experiences of the research subjects (Jain, 2021). This descriptive analysis not only involves organizing data, but also interpreting the meaning behind respondents'

statements, which are then structured into a coherent narrative. This approach allows researchers to provide a richer and more detailed of qualitative findings, revealing insights that cannot be gained through statistical methods alone (Acar & Kayaoglu, 2020)

RESULTS AND DISCUSSION

The results of this study are divided into several sub-sections. First, it provides data on the perceptions and experiences of EFL students in using the Google Read Along app with AI Speech Recognition for pronunciation learning. Second, it explores whether AI Speech Recognition in the Google Read Along application can help address common pronunciation errors frequently made by EFL students.

This study focuses on the use of Artificial Intelligence (AI) in English language learning, specifically in the context of pronunciation for EFL learners. The AI technology examined in this study is the AI Speech Recognition in the Google Read Along application. The research was conducted at four universities with a total of 120 student respondents. The questionnaire was distributed to students with both English and non-English educational backgrounds, provided they had completed English language courses. The summary of the questionnaire data is presented in the following table.

Table 3. *Student's perception and experience in using the Google Read Along app*

No	Statement	Score	Category
1	You feel more confident in your pronunciation after using this app	66.3%	Agree
2	This app helps you better understand your pronunciation mistakes	56.4%	Agree
3	You feel more motivated to learn pronunciation after using this app	63.4%	Agree
4	The Google Read Along app is easy to use for pronunciation learning	75.2%	Agree

Based on Table 1, it can be seen that the perceptions and experiences of EFL students in using the Google Read Along app in pronunciation learning are very positive (Al-Sofi, 2020; Metruk, 2021). The most of students find the app easy to use, as indicated by a score of

75.2%, which helps them practice pronunciation independently (B. Setiawan et al., 2024). Some students also stated that the feedback provided by the app, despite being AI-based, is very helpful in correcting their pronunciation mistakes (56.4%), making them feel more confident in their English pronunciation skills (66.3%). This aligns with research conducted by (Nety et al., 2020) which shows that students feel more confident, improve their pronunciation skills, and experience increased motivation to learn English pronunciation using apps that employ speech recognition technology. The increase in confidence also has an impact on students' motivation to learn English pronunciation (63.4%). The boost in confidence and motivation experienced by learners when using ASR technology can enhance engagement and perseverance in their L2 learning efforts (Gürbüz & Cabaroğlu, 2021; Pitriyah & Sulistyaningrum, 2024).

Table 4. *Effectiveness of Google Read Along in detecting common pronunciation errors*

No	Statement	Score	Category
1	The Google Read Along app helps you identify and correct vowel sound pronunciation errors	53.5%	Agree
2	The Google Read Along app helps you identify and correct consonant sound pronunciation errors	47.5%	Agree
3	The Google Read Along app helps you identify and correct syllable pronunciation errors	59.4%	Agree
4	The Google Read Along app helps you identify and correct word stress errors	58.4%	Agree
5	The Google Read Along app helps you identify and correct sentence stress errors	58.4%	Agree
6	The Google Read Along app helps you identify and correct intonation errors	54.5%	Agree
7	The Google Read Along app helps you identify and correct connected speech errors	57.4%	Agree
8	The Google Read Along app helps you identify and correct rhythm and tone errors	57.4%	Agree

Along app helps you
identify and correct
rhythm and tone errors

Based on Table 3 above, the research results show that the AI Speech Recognition in the Google Read Along app can effectively help address several common pronunciation errors in English often made by EFL students (Thi-Nhu Ngo et al., 2024). Errors such as incorrect vowel pronunciation (53.5%), consonant pronunciation (47.5%), syllable pronunciation (59.4%), sentence stress placement (58.4%), basic intonation (54.5%), connected speech (57.4%), as well as rhythm and tone errors (57.4%) can be corrected through regular use of this app. The data shows that students demonstrated greater improvement in vowel pronunciation errors compared to consonant errors. This can be attributed to the design of Google Read Along's AI feedback system, which is more effective at detecting and correcting elongated and stressed vowel sounds. Vowels, being more distinct in phonetic duration and resonance, are easier for the AI to analyze and assess. Conversely, consonants particularly those involving subtle articulatory differences like fricatives or plosives are less salient in audio signals, making them harder for the system to process accurately. Furthermore, vowels often carry more weight in distinguishing meaning in spoken English, which may encourage students to focus on improving them during practice.

However, some more complex errors, such as pronunciation influenced by local accents or specific phonological mistakes, require further intervention from instructors for refinement (Ahmad et al., 2024). The use of technology in pronunciation learning, especially in correcting syllable pronunciation and connected speech, was found to be effective (Al-Jarf, 2022). However, it was also noted that more complex errors, such as those influenced by local accents, often require additional guidance from instructors (Stevani et al., 2023).

After respondents completed the questionnaire, the researchers selected several samples for follow-up interviews. These interviews were conducted in person, and recordings were made for data collection purposes. The aim of this stage was to gather more in-depth information based on the data obtained in the previous phase (Taherdoost, 2021). Below is the transcript from the interview recordings:

Students' perceptions and experiences in using the Google Read Along app with AI speech

recognition for pronunciation learning

"After using this app, I feel more confident in my English pronunciation. I'm no longer embarrassed to pronounce English words because I now know how to pronounce them correctly." (Respondent 1)

"I find this app very helpful, especially since I can practice anytime, anywhere. The AI Speech Recognition provides real-time feedback on how I pronounce words, allowing me to fix my mistakes instantly." (Respondent 2)

"I like the feature where I can hear how native speakers pronounce words, then I try to imitate them. After that, the AI evaluates whether my pronunciation is correct. It's very useful, especially since I often struggle with certain sounds in English." (Respondent 3)

"After a few weeks of using Google Read Along, I've noticed significant improvements in my pronunciation, especially with long vowels and tricky consonants. I feel more confident speaking English in class and see real progress." (Respondent 4)

Based on the interview responses above, it can be concluded that Google Read Along has a positive impact on students' pronunciation skill and confidence. Google Read Along help students to pronounce English word correctly, reducing embarrassment and hesitation in speaking. The overwhelmingly positive perceptions of the app among students align closely with their measurable improvements in pronunciation. Many students reported feeling more confident and engaged due to the app's immediate feedback and gamified approach. This positive feedback loop likely contributed to sustained effort and practice, resulting in tangible progress. However, it is important to note that perceptions alone do not guarantee improvement, as consistent practice and intrinsic motivation also play critical roles. The alignment of perceptions with objective outcomes in this study underscores the potential of AI tools like Google Read Along to bridge the gap between learning enjoyment and actual skill development (Egara & Mosimege, 2024).

This application can be used anywhere and anytime, and students' also receiving real-time and immediate correction feedback (Saadia, 2023) In another word, the respondent responses indicate that the app is effective in enhancing pronunciation, providing accessible practice opportunities, and increasing confidence among learners. The real-time feedback, native speaker

imitation, and error correction seem to be the key features contributing to these improvements (Qiao & Zhao, 2023)

AI speech recognition in the google read along app helping to address common english pronunciation errors made by EFL students

"Yes, it's very helpful. The AI detects even small mistakes that I usually overlook, like the difference between long and short vowels. For example, I often mix up 'ship' and 'sheep,' but the AI immediately points out the mistake and shows me how to correct it."

"Absolutely. The AI not only corrects my pronunciation but also helps me understand the proper intonation and stress. For example, I often stress words incorrectly, like in 'photography' and 'photograph.' The AI clearly shows where the stress should be, and I quickly learn to fix my pronunciation."

"Some mistakes, like the 'r' sound in certain words, especially in the middle of words like 'world,' are still difficult to correct. The AI gives feedback, but it still takes time and extra practice to improve. However, I believe the AI will help me fix these issues over time."

"Besides vowels and consonants, I often struggle with connected speech when speaking quickly. The AI helps me be more aware of correct pronunciation when words blend together, like in phrases such as 'want to,' which sounds like 'wanna.' It helps me understand when I can use a more relaxed pronunciation and when I need to be clearer."

Based on the interview analysis it revealed that most respondents indicated that the app has increased students' confidence in their English pronunciation. The students appreciate the real-time feedback, flexibility, and ability to mimic native speaker pronunciation (Sudirahayu et al., 2024). The respondent report significant improvements in vowel, consonant, and intonation pronunciation and feel more confident speaking English in the classroom (Bashori et al., 2024).

In addressing Pronunciation Errors: The app helps students overcome common pronunciation errors, such as long versus short vowels, word stress, and connected speech (Inceoglu et al., 2020). However, more complex errors, such as those influenced by local accents or certain sounds, require extra time and practice to correct. Overall, the Google Read Along app with AI

Speech Recognition has proven effective in helping EFL students improve their English pronunciation, although further intervention from instructors may be needed for more complex errors (Takenouchi, 2022)

The findings in this study are consistent with previous research that highlights the effectiveness of AI tools in improving pronunciation accuracy. Studies on AI-based language learning tools, such as Duolingo and ELSA Speak, also report significant gains in phonetic accuracy, particularly in vowel sounds (Anggraini, 2022; Dini et al., 2020; Stevani et al., 2023). However, some discrepancies emerge when considering the efficacy of AI tools for nuanced consonantal errors or regional accents. Unlike those tools, Google Read Along is primarily designed for younger learners, which may account for its simplified feedback mechanism. This limitation suggests that while Read Along is effective for foundational pronunciation practice, it may not address advanced or context-specific needs as comprehensively as other tools.

CONCLUSION

The research finding showed that students have positive perceptions of the usage AI Speech Recognition in Google Read Along Application. Students responded positively to the Google Read Along app. They found it engaging and user-friendly, which helped to maintain their interest in improving pronunciation and reading skills. Many students appreciated the immediate feedback feature of the app, which allowed them to identify and correct errors in real-time. However, some students expressed concerns about the accuracy and consistency of the app's feedback, particularly with less common words or accents.

In the effectiveness of the application in detecting pronunciation errors, the application proved effective in detecting common pronunciation errors, especially with frequently used words. It helped students become more aware of their mistakes and provided suggestions for improvement. While it detected common errors efficiently, there were limitations in recognizing more nuanced or advanced pronunciation issues, indicating that the application's functionality may need to be supplemented with other learning tools for more comprehensive pronunciation training.

While the study provides valuable insights into the effectiveness of Google Read Along's AI speech recognition in improving EFL students' pronunciation, several limitations should be

acknowledged. One significant limitation is the short duration of the intervention, which may not allow for the full development of students' pronunciation skills. A longer intervention period could yield more comprehensive insights into the app's impact over time. Additionally, while the AI feedback is effective for addressing basic pronunciation errors, complex errors, particularly those influenced by regional accents or advanced phonetic nuances, require instructor involvement. The AI's feedback mechanism, while efficient, is not yet equipped to handle such complexities independently.

The findings suggest several practical implications for educators. AI tools like Google Read Along can effectively complement traditional pronunciation instruction by providing consistent, real-time feedback and fostering independent practice outside the classroom. However, educators should be mindful of the tool's limitations and use it in conjunction with face-to-face instruction to address nuanced errors and provide personalized guidance. Additionally, integrating such tools into a blended learning approach can help sustain student engagement and improve overall learning outcomes. By leveraging the strengths of AI while mitigating its weaknesses, educators can create a more holistic and effective learning environment for EFL students.

Based on these findings, several recommendations can be made. For educators, it is recommended to use Google Read Along as an additional tool to reinforce classroom activities, providing students with additional practice and feedback outside of the formal learning environment. This can help maintain engagement and strengthen key pronunciation skills. For developers, the main area for improvement lies in improving the AI's error detection capabilities, especially for the robustness of different pronunciations such as those affected by local accents or complex consonant sounds. By increasing the AI's sensitivity to these subtleties, developers can make the tool more effective for learners at advanced stages of language acquisition.

Future research should explore the long-term effects of AI speech recognition on pronunciation, as the current study only examines short-term improvements. Investigating whether sustained use of tools like Google Read Along leads to lasting changes in pronunciation could provide valuable insights into their efficacy. Furthermore, comparative studies with other AI-based language

tools could highlight strengths and weaknesses across platforms, helping to refine best practices for integrating AI into language learning curricula. Such research could also provide a deeper understanding of how different AI technologies address various pronunciation challenges in diverse linguistic contexts.

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