Improving English Pronunciation with AI Speech-Recognition Technology

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ABSTRACT

This study explores the use of AI technology in the Google Read Along application as a tool to improve English pronunciation, particularly for students who struggle with English pronunciation. Therefore, the purpose of this study is to evaluate the Google Read Along app's effectiveness in improving English pronunciation, analyze the students' responses to using Google Read Along, and discover the factors that help students succeed in improving their pronunciation. Read Aloud is used in conjunction with AI technology to help children learn by listening to and precisely repeating new words and phrases. A quasi-experimental method was used to collect data, with 35 students in the experimental group and 35 in the control group. A questionnaire was presented to the experimental group regarding how they responded to Google Read Along, and interviews were conducted as further information to identify the factors affecting their pronunciation improvement. The results of the N-Gain test show that the Google Read Along is efficient in helping students improve their English pronunciation when used in combined with the Read Aloud approach by an average of 65.73 percent. As a result, a teaching strategy that combines the Read Aloud method and AI Google Read Along can be an effective alternative. Additionally, the instant feedback offered by this application gives students a chance to recognize their errors directly, and the convenience of using the application for learning anytime anywhere has a significant impact on their success in improving their pronunciation.

Keywords: Google Read Along, Read Aloud, pronunciation.

I. INTRODUCTION

1.1. Introduction

English language is important to master in any field, particularly in academics and business. However, the students who learn English, especially non-native speakers, often face obstacles in improving their English pronunciation skills (Megawati, 2016; S. A. Nurani & Rintaningrum, 2021; S. Nurani & Rosyada, 2015; Susanthi, 2020). The students often

pronounce English words incorrectly because they are not familiar with them and they have a particular accent that is influenced by their mother language. Therefore, English pronunciation is important, especially for those who work for paticular occupations who needs clear pronunciation such as air traffic controllers or customer service officers. Exercising English pronunciation can help the conversation run smoothly and avoid difficulties in understanding or being understood by others.

Those pronunciation errors regularly happen and are considered common by students and teachers. It, of course, can make misinterpretations to the interlocutors. Sofiyanti said that this can be a crucial thing in English speaking. It is because pronunciation is one of the three elements of language that plays an important role in supporting four language skills, along with vocabulary and grammar (Sofiyanti, 2014).

Examples of pronunciation errors that are commonly found and considered common such as the word "debt". The students should pronounce [det], instead of pronouncing [deb]. It is because there is a silent letter [b] that is not supposed to be pronounced. Another example is "write", which this word there is a silent letter [w], so that students should pronounce [rait], instead of pronouncing [wrait]. If that word is changed into past participle form, it will be "written", which is supposed to pronounce [ritten] instead of pronouncing [wraiten]. Ironically, these errors can be often found in college students who have already studied English for several years. At some point, to minimize the errors in learning English, some people still use conventional methods, such as reading phonetic code that is textually written in an English dictionary, and/or some follow the teacher's pronunciation who is actually non-native speaker who may still bring mother language in their pronunciation.

Therefore, in this 4.0 technology era, there is artificial intelligence technology or Artificial Intelligence (AI) that can be utilized. As Copeland stated that artificial intelligence (AI) is a technology that enables computer systems to perform tasks that normally require human intelligence, such as reasoning and finding meaning (Copeland, 2023). This technology can be an effective and efficient alternative in improving English pronunciation, one of which is AI Speech Recognition technology, where this technology can be used to improve English pronunciation. According to Lyman Speech Recognition is an artificial intelligence-based machine technology capable of identifying spoken sentences and converting them into text form. This technology is also known as Speech-To-Text (STT) and Automatic Speech Recognition (ASR) (Lyman, 2023). In its use, Speech Recognition can help the computer to receive input in the form of spoken words (Al Faruq et al., 2019). The examples of AI Speech Recognition are Google assistant, Mozilla, Elsaspeak, Speechify,

Reelgood, Read Along and many more. Meanwhile, in this study, Read Along will be used as a web-based AI media application owned by Google.

By using AI Speech Recognition technology, a person can record their own voice while reading sentences or words in English, and then get feedback on the correct emphasis, intonation and pronunciation. This technology can recognize and correct English pronunciation errors, thereby enabling users to better understand and master English better as well as the previous study that explore. Apart from having nice visuals, the Google Read Along app application uses AI Speech Recognition technology that makes simpler for users to use the reading aloud feature and simultaneously scan spoken English words in accordance with the reading text. The text scanner will not function and will not move on to the next word if the word is not spoken correctly.

Several studies have been conducted to apply this technology to English students, such as research using the Automatic Speech Recognition system using the MFCC and HMMs methods to detect mispronunciation of English words (Azizah et al., 2015). In addition, there is also research on the application of Speech Recognition technology to practice English pronunciation through the dictation method (Faizal M & Alimudin, 2018). Besides, there is a study that researched the impact of AI technology to improve the pronunciation and speaking skill of EFL learners; the results says the utilization of ASR technology with peer correction can be a potent approach in enhancing L2 pronunciation and speaking skills among EFL learners (Sun, 2023). Of course these studies are used as a reference in this study, but in this study the researcher combine the read aloud method by applying AI technology.

Besides, the read aloud method is an effective method for improving pronunciation skills in lline with several previous studies that the read aloud method can improve reading skills and improve pronunciation of language students (Doff, 1988; Abimanto, 2020a; Huang, 2010; Endahwati et al., 2022; Sardegna & McGregor, 2022). In fact, with this conventional model, it is difficult to get accurate and fast feedback. AI Speech Recognition technology can provide instant and accurate feedback to students, so that it can help students improve their English pronunciation more effectively.

The difference between this study and previous research lies in the combination of AI Speech Recognition technology, which is Google Read Along app and the read aloud method in improving English pronunciation. Although this technology has been widely used in the fields of speech and language recognition, its use in improving English pronunciation through the read aloud method is still relatively new and research is still rare. Therefore, this research is expected to provide new contributions in the field of English, especially in improving

English pronunciation for participants who need more assistance in improving their English speaking skills.

1.2. Research questions

Based on the above explanation, a number of objectives of this study are presented, such as: 1) How is effective Google Read Along app in improving English pronunciation for students using the read-aloud method compared to conventional methods? 2) What are the students' responses to using Google Read Along app in learning English? 3) What are the factors that affect the successful use of AI Speech Recognition technology in improving English pronunciation through the read-aloud method?

1.3. Significances of the study

There are three significances of the study, the three significancea are as follows: 1) By improving pronunciation, communication in English can be well understood by others, especially in international academic and business environments; 2) Students can practice independently and get direct feedback on their pronunciation, thereby increasing the efficiency and effectiveness of learning; 3) Contributing to the development of more innovative and adaptive English learning methods through the use of AI technology.

2. METHOD

2.1. Research Design

This study used a quasi-experimental design with a non-equivalent control group, In this type of research the researcher divided the two groups, i.e. experimental class and the control class which were both given a pre-test and a post-test. However, in the experimental class before being given the post-test, the researcher gave the Read Aloud method by using Google Read Along app.

Figure 1. Design of Non Equivalent Group Design

NR	O_1	X	O_2
NR	O_1		O_2
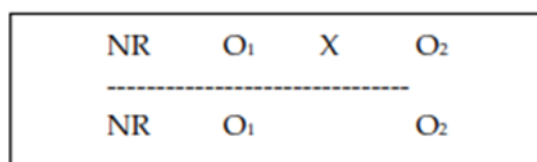
Note:

O1   : Experimental group before being given treatment

O2   : Experimental group after being given treatment

O3   : Control group before being given treatment

O4   : Control group before after treatment

X   : treatment (Google Read Along app)

2.2. Participants

The subjects in the study were early-level students of AMNI Maritime University who took English subjects, totaling 70 students who were grouped based on the experimental class which consisted of 35 people and 35 others who were in the control class. The experimental class was given treatment by providing the Read Along method using Google Read Along app, while the control class was given nothing.

2.3. Instruments

The data collection method used was by conducting quasi-experiments, questionnaires and interviews. So the instruments used in this study were the assessment rubric of the pre-test and post-test reading with assessment indicators adapted to English pronunciation, and response questionnaires from students about using Google Read Along app in learning English pronunciation, as well as interview questions posed to participants to find out the factors that support improving student pronunciation.

In the assesment of the effectiveness of Google Read Along applied in the experimental class, the researchers used N-Gain score category based on the percentage by Hake. The following is the table of parameter of N-Gain score.

Table 1. N-Gain Score Parameter

Percentage (%)	Note
< 40	Not effective
40 – 55	Less effective
56 – 75	Effective enough
> 76	effective

Source: (Hake., 1999).

2.4. Data Analysis

This research was analyzed using the SPSS application to find the effectiveness of Google Read Along app with the quasi-experimental method and look for the N-Gain score from the processed data.

3. FINDINGS AND DISCUSSIONS

3.1 FINDINGS

Based on the data that has been collected in this study, there are several test results that will be presented in this chapter of findings, namely, the results of the independent t-test, and the N-Gain value to determine the effectiveness of Google Read Aloud in improving pronunciation.

Table 2. Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Hasil	Equal variances assumed	1,543	,218	5,615	68	**,000**	3,457	,616	2,228	4,686
	Equal variances not assumed			5,615	65,573	**,000**	3,457	,616	2,228	4,687

Source: SPSS output v.26

From the table above, sig. (2-tailed) of 0.000 <0.05, meaning that there is an average difference in student assessment results between the use of Google Read Along app and not.

Table 3. Result of N-Gain Score

Experiment Class	Mean	65,73%
	Minimum	43,48%
	Maximum	85,71%
Control Class	Mean	50,39%
	Minimum	37,50%
	Maximum	66,67

Source: SPSS output v.26

Based on the results of the calculation of the N-Gain score test above, it shows that the average value of the N-Gain score for the experimental class (Google Read Along app with the read aloud method) is 65.73 or 65.73%, where this figure is included in the category effective enough. With a minimum N-gain score of 43.48% and a maximum of 85.71%. Meanwhile, the average N-Gain score for the control class (without Google Read Along app) was 50.39%, which was included in the less effective category, with a minimum N-Gain score of 37.5% and a maximum of 66.67%.

The following is a table that describes data about student responses to using Google Read Along app in improving pronunciation:

Table 4. Students' Responses

No.	Students' Responses	Percentage (5)
1	Positive Impact	71
2	Improved Confidence	57
3	Increased Engagement	80
4	Enhanced Practice	68
5	Better Understanding	63
6	Convenience	83
7	Recommendation	91

Source: Researcher, 2023

The information was collected from a group of 35 students who enrolled in an experimental class. A percentage of 71% of students indicated that their pronunciation skills were positively influenced following to using Google Read Along app. Around 57% of students reported an obvious improvement in their confidence while speaking in English conversations. A significant proportion of students, approximately 80%, reported a high level of participation with Google Read Along app. Approximately 68% of students expressed their appreciation for the ability to engage in focused and repetitive practice facilitated by Google Read Along app. About 63% of students indicated that their understanding of appropriate pronunciation principles and procedures improved as a result of using Google Read Along app. A significant majority of students, specifically 83%, stated the convenience of utilizing Google Read Along app. An impressive 91% of students showed a notable willingness to recommend Google Read Along app to their friends as a tool of improving their pronunciation skills.

3.2 DISCUSSION

3.1 The Effectiveness of Google Read Along App in Enhancing Pronunciation

Based on the findings it suggests that the experimental class, which utilized Google Read Along app, achieved an average N-Gain score of 65.73%. This score comes within the category of effectiveness, indicating that the treatment was successful to a satisfactory degree. On the other hand, the control group, which did not utilize Google Read Along app, showed an average N-Gain score of 50.39%, placing it under the classification of "less effective." In other terms, an interesting result from this study is the observed difference in performance between the experimental and control groups. The experimental group, which employed the use of Google Read Along app, showed a higher level of progress in pronunciation skills, surpassing the outcomes observed in the control group. This indicates the integration of the AI tool had an obvious and beneficial effect on students to pronounce words accurately. Furthermore, it is important to emphasize that the control group, which

exclusively utilized the Read Aloud method, showed lower outcomes, even in comparison to conventional methods of learning that did not use the Read Aloud method.

3.2. Students' Response

Regarding the result of students' responses of the positive impact about Google Read Along app; they stated that the offer of instant feedback and the opportunity for personalized learning were particularly helpful. They also stated that the increase in performance has been correlated to the implementation of gamified features and the continuous tracking of progress provided by Google Read Along app. In addition, they conveyed that the integration of gamification parts, such as the ability to earn rewards and take part in competing with their peers, had an essential role in keeping their motivation. They had an opinion that the particular feature of a repetitive practicing tool played a substantial role in enhancing their speaking skills. They also found that the combination of visual and audio cues in the tool played a crucial role in achieving this outcome. Furthermore, they put importance on having the ability to engage in pronunciation practice at their own pace and convenience, despite location or time limits. In fact, they shared an opinion that the tool had a significant and beneficial influence on their learning.

3.3. Factors that Infleuce Improved Pronunciation Skill after Using Google Read Along App

In order to evaluate the factors that influence student in improving English pronunciation using the Google Read Along app application, we conducted interviews with 35 students who were involved in this experimental class. The results of our interviews reveal some interesting findings. First, most students admit that easy access to Google Read Along app really helps them to practice consistently. They can use the app according to their own schedule, which makes the learning process more flexible. Also, the real-time feedback from the app helps them quickly correct pronunciation mistakes. Second, support from teachers is also considered very meaningful by students. Teachers can provide more specific directions on areas that need improvement in their pronunciation. Several students found that special sessions with their teachers to discuss results from Google Read Along app were very helpful. Third, motivation plays an important role in success. Students who experience improvement in their pronunciation through this application feel more motivated to continue practicing and overcoming their mistakes. They feel confident in speaking English. However, we also found that students' native language skills can affect their success rate. Students with different English language backgrounds may face varying levels of difficulty in improving their pronunciation. In addition, awareness of mistakes is also a key factor. Students who are

able to identify their own pronunciation errors and are willing to try to correct them tend to achieve better results.

Prior studies have shown that the use of artificial intelligence (AI) technology, exemplified by the Google Read Along application, has the potential to make an important contribution towards improving English pronunciation. The results mentioned above line up with theoretical viewpoints that support for integrating of artificial intelligence (AI) technologies into the field of foreign language learning. In addition to this, the present study aligns with the theory that asserts the effectiveness of using the Read Aloud method as an useful learning tool. The effectiveness of the Read Aloud method for improving pronunciation and listening comprehension skills has been well acknowledged in the field of language teaching (Doff, 1988; Abimanto, 2020a; Huang, 2010; Endahwati et al., 2022; Sardegna & McGregor, 2022). In the current context, the integration of artificial intelligence (AI) technology with the Read Aloud method of learning has demonstrated effectiveness in improving the process of acquiring English language proficiency, especially in pronunciation.

Nevertheless, it is important to acknowledge that this study introduces a novel aspect to the use of artificial intelligence (AI) technology in the field of learning the English language, specifically through analyzing the application of Google Read Along. The research findings indicate that this particular app offers significant benefits for improving pronunciation skills while offering instant feedback to users, a feature that is not regularly found in other applications. The findings of this study align with the research conducted by Sun (2023), which showed that the use of AI ,Automatic Speech Recognition (ASR) technology, related to improvements in English pronunciation for learners of English as a Foreign Language (EFL). This is also accomplished by offering frequent practice and instant feedback like Google Read Along provides. In summary, this study significantly improves the understanding of the possible benefits of artificial intelligence (AI) technology to improve English speaking skills, especially pronunciation. The results mentioned earlier line up with prior theories, indicating that the Google Read Along app offers a distinct and efficient method for English language learning. Therefore, it presents an acceptable alternative for English language learning in the near future.

CONCLUSION

Google Read Along's use of artificial intelligence makes it a useful tool for improving English pronunciation, especially for those who have trouble with the language's pronunciation. Combining this artificial intelligence with the Read Aloud method, which has

students listen to and then accurately repeat words and sentences, has proven to be an effective way. Also, students' positive reactions to using AI technology have an effect on their vocabulary, confidence, and listening and comprehension skills. Combining AI Google Read Along with the Read Aloud method can be an effective alternative for teaching English.

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