



The Effects of Duolingo Application on The Vocabulary Enrichment and Reading Comprehension of 10th Grader Senior High School Students in Jajar Islamic Centre Surakarta

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Abstract: The high development of information technology in the worldwide, students prefer to learn English directly by using an internet connection that can be accessed inside an outside the classroom by their smartphone. One of the most popular language learning application is Duolingo that facilitates language learning by giving an English course model based on everyday activities in an easy and interesting way. This study is aimed to find out that Duolingo App can improve the students' vocabulary and reading comprehension skill especially in 10th grader of Jajar Islamic Center Surakarta. This research was conducted to find the truth that the Duolingo application can improve vocabulary and also students' reading skills. This research uses a quantitative method with a pretest and posttest design and will be analyzed using Microsoft Exel. From the research findings, it was obtained that the average English language score for 10th grader of Jajar Islamic Center Surakarta increased from 73,9 to 80,3 after being given the treatments using Duolingo application. So, from this research, it can be concluded that the Duolingo application can improve vocabulary skills and also students' reading skills.

Keywords: Duolingo App, Vocabulary Mastery, Reading Comprehension.

Introduction

The Research Background

English is one of the important foreign language in Indonesia especially in the globalization era , English Language acquisition is significant as education world ([Nita, Sekreningsih, et al, 2023](#)). English also one of some subjects that have to be studied by students in Senior High School level and tested in the examination incudes national examination or University Selection Examination (UTBK). There are four aspects which could be master of English listening, speaking, reading, and writing ([Lature, R. T. 2025](#)). But students cannot learn these four skills well without knowing English Vocabulary first. The previous study from Alqahtani (2015) stated "the most important part in learning foreign languages is vocabulary learning because there are new words that must be emphasized both in books and in class". Vocabulary is also important to conducted sentences so the students who has high vocabulary level, it should be good in writing achievement too. According ALnalouti, M. Z. A. (2025) to Vocabulary is seen as an

essential element of language proficiency; without a robust vocabulary foundation, learners find it challenging to communicate effectively, even if they possess grammatical understanding. In addition to the four English skills, students' language abilities will improve as they learn additional vocabulary ([Suhendra et al, 2024](#)).

In previous studies Jaelani & Sutari (2021) they said that most students in Indonesia still lack mastery of English vocabulary, and this is a big problem that must be overcome, automatically they have difficulty understanding English. It gives effect to students' ability to understand the sentence or text, they don't know what does the text mean because their limited access in vocabulary. Students cannot understand the meaning that is intended to be conveyed in a text, so they feel bored and less motivated. Then, among the difficulties is that students are not given the right media during the learning process. Therefore it will make students bored and not excited in learning English. To address these challenges, innovative teaching methods and technology integration are essential. Technology, including educational applications, has the potential to enhance vocabulary learning by providing interactive and engaging experiences. ([Mujiarni et al, 2024](#)).

In the digital era, technology has transformed education, offering more flexible, interactive, and engaging learning experiences ([Sibuea et al, 2025](#)), as a teacher in the modern era we must be able to keep up with the digital age of technology like today and use technology to support education-related activities. By using technology students can learn inside or outside the classroom thus learning activities can become more creative, efficient, and effective with the right technology ([Azzahara et al, 2023](#)). "Technology, including educational applications, has the potential to enhance vocabulary learning by providing interactive and engaging experiences" ([Matra, 2020](#)). Still according to her "the applications and games can significantly improve understanding and motivation among students". And then the teacher has to choose the most appropriate and effective media to proof students' vocabulary enrichment and reading comprehension. One application that makes it easy for students to learn English is the Duolingo Application. The company's mission is to make education free, enjoyable, and accessible to everyone ([Hamid, R., & Sangkala, I, 2023](#)). As noted by ([Vesselinov & Grego, 2012](#)), Duolingo uses gamification—points, levels, feedback, and progress tracking—to create an interactive and enjoyable learning experience. The app also supports visual, auditory, and kinesthetic learning styles through multimedia content.

Some researches support the use of Duolingo in vocabulary acquisition ([Suci, 2022](#)). found that 70% of students agreed that Duolingo helped them learn vocabulary more easily, with learners showing a positive attitude toward the app. Nadrun (2023) noted that students found Duolingo's interface intuitive and its vocabulary practice accessible. And then the Hidayat (2025) showed that his study demonstrates that digital gamified learning can be both motivating and effective for primary students.. According to Ginting (2023) Duolingo uses an approach focused on interactive games and exercises to help students expand their vocabulary. The app offers different types of exercises, such as listening, reading, writing and speaking exercises. In Ajisoko's research (2020) it is

known that students learning vocabulary using duolingo are considered more fun and do not make the learning atmosphere boring. In addition, students' motivation in learning vocabulary also increases. On the other hand, Aulia et al (2020) showed that the experimental class that used Duolingo as a medium for learning English vocabulary had a higher mean value, compared to the control class.

In this paper, the author wants to encourage the English teacher in Indonesia that we are still play the main role in the students acquisition of foreign language, the teacher should realize helping the student overcome this obstacle is their responsibility and they should move on from the traditional method if it is not appropriate in this modern era, using digital platform such as mezmerise application, cake application, and especially duolingo application should be tried now.

The Research Problem

Based on the problems that the author mentioned in the research background , the main focus of the discussion is "How is the Duolingo application in improving the students' vocabulary mastery and reading comprehension in ten grade of Jajar Islamic Center Surakarta".

Methodology

This research will be a quantitative approach which is appropriate for examining relationships and testing hypotheses using numerical data and statistical analysis ([Creswell, 2012](#)). This research was pre-experimental design that will focus on one group ([Gay et al., 2012](#)). This group received treatment of duolingo. In this action of the method ,the pre-test was held to the group before the application treatment is used , than a post-test was given after the treatment was applied to the group using Duolingo. The experimental design is to test and prove whether the hypostasis is accepted or the hypothesis is rejected ([Muthmainnah, M., 2023](#)). So the conclusion is that the method has the objective of explaining the relationship between one variable and another variable (variable X, Y and variable Z). The following is an overview of the design.

Table 1. overview of the design.

Class	Pre - Test	Treatment	Post -Test
Experimental Gruop	Y ¹		Y ²
	Z ¹	X	Z ²
Control Group	Y ¹		Y ²
	Z ¹		Z ²

Variable X : Duolingo Application

Variable Y : Vocabulary Matery

Variable Z : Reading Comprehensoion

Based on the table above, it shows that this research will be divided into two groups, the first is called the experimental group which consists of class 10 A and the

second is the control group which consists of class 10 B. In the class 10 A, the researcher will carry out the research using Duolingo media and the control group will not be treated.

The Research Setting.

The location where research activities are conducted is known as the research setting ([Putri, 2024](#)). The research is conducted in Pondok Pesantren Jajar Islamic Center Surakarta.

The Data

Data is facts or figures from which conclusions can be drawn (Ajayi , 2023). This research uses quantitative data obtained from the results of the pretest and posttest score, the results of which present the vocabulary and reading abilities of class 10 at Jajar Islamic Center Surakarta before and after given a treatment. The data reflects students' understanding of English especially in vocabulary mastery and reading comprehension which has the same topic when the research was conducted.

The Data Sources

The data source of this study was taken by the author from class 10 at the Jajar Islamic Center Surakarta in the 2025-2026 academic year. The core instrument of this study was a pretest and posttest given to two groups, namely the experimental group and the control group. To strengthen the results, the author provided additional information by conducting classroom observations and also interviewing several students to find out their difficulties, challenges, opinions and experiences during the teaching learning process using Duolingo or conventional method.

The Technique of Collecting Data

Collecting Data is the process through which researchers gather as much information as possible regarding the research problem (Mardawani, 2020). There are three main steps to obtain data in this study, the first is the pretest, the second is the treatment, and the third or last is the post test. In the pretest, students are given practice questions or exams to determine their abilities in vocabulary and reading comprehension skills. Then the groups that have been formed, namely the experimental group and the control group, are given different treatments. The experimental group is given treatment using the Duolingo application for 5 meetings, while the control group continues their learning using the conventional method. After 5 meetings are conducted, both groups are given a post test to evaluate the improvement of the group that is given a treatment using the application and the group that is not. The post test consists of 30 questions consist of multiple choice and short essay.

The Technique of Analyzing Data

Data analysis is the process of systematically searching for and organizing the results of observations, interviews, and documentation collected to enhance the understanding of all gathered materials and to enable the presentation of findings (Yuliastri, 2025). The data obtained from this study will be analyzed and processed using Microsoft Excel to find out how students have improved before and after treatment using the Duolingo application. If the average results of the experimental group students are higher than control group, then the Duolingo application indicates that it can be used to increase vocabulary levels and also reading comprehension skills compared to the group that was not given treatment.

Result and Discussion

After the researcher got the data from the pre and post test score, the data will be analyzed by using Microsoft excel. The Analysis start with descriptive analysis which mean, median and minimum and maximum score were calculated to explain learners' vocabulary and reading skills.

Table 2. The Pre Test Table Both Experimental dan Control Group

Experimental Group			Control Group		
No	Name	Score	No	Name	Score
1	Abdurrahim Hafiz Alauddin	75	1	Ahmad Hanif Nibras	78
2	Akmal Ansharullah	70	2	Ahnaf Syafiq Imanullah	81
3	Azzam Prabowo Putro	84	3	Albani Ray Dzakhir	85
4	Dzaki Ditya Putrama	75	4	Andrea Handi Brevianto	85
5	Fathi Najahul Muttaqin	78	5	Ayyub Al Atsary	75
6	Ismail	78	6	Fawwaz Davta Izaz Naufa	79
7	Ismail Abdurrahman Al Kautsar	60	7	Faza Ubaidillah	70
8	Luthfi Abdurrahman Assidiqi	78	8	Humam Baihaqi	91
9	Mochamad Zainal Fanani	73	9	Iman Fajri Ramadhan	76
10	Muhammad Ahnaf Thobary	88	10	Isa Abdulloh Said	85
11	Muhammad Fachri Abbas	66	11	Muhamad Hafid Nasrullah	79
12	Muhammad Hanif Romadhon	66	12	Muhammad	78
13	Musa Mahmud Fauzi	68	13	Muhammad Burhanudin	82
14	Mustafid Kaysan	90	14	Muhammad Daffa Syah Rizal	89
15	Nayottama Azriel Nugroho	68	15	Muhammad Sabiq	76
16	Satria Azam Putradana	70	16	Nufail Rifqi Alfarrosi	83
17	Sulaiman	60	17	Rifqy Muhamad Tri Zaky	76
18	Umar Abdul Aziz	95	18	Rijal Farras Atthabarani	87
19	Wafa Dewantara Ramadhan	60	19	Samsul Bachtiar	79
20	Zuhri	76	20	Syaifudin	76
Average		73,9	Average		80

Table 3. The Post Test Table Both Experimental dan Control Group

Experimental Group			Control Group		
No	Name	Score	No	Name	Score
1	Abdurrahim Hafiz Alauddin	80	1	Ahmad Hanif Nibras	78
2	Akmal Ansharullah	78	2	Ahnaf Syafiq Imanullah	80
3	Azzam Prabowo Putro	90	3	Albani Ray Dzakhir	80
4	Dzaki Ditya Putrama	78	4	Andrea Handi Brevianto	85
5	Fathi Najahul Muttaqin	80	5	Ayyub Al Atsary	78
6	Ismail	80	6	Fawwaz Davta Izaz Naufa	80
7	Ismail Abdurrahman Al Kautsar	90	7	Faza Ubaidillah	75
8	Luthfi Abdurrahman Assidiqi	76	8	Humam Baihaqi	85
9	Mochamad Zainal Fanani	80	9	Iman Fajri Ramadhan	76
10	Muhammad Ahnaf Thobary	90	10	Isa Abdulloh Said	87
11	Muhammad Fachri Abbas	70	11	Muhamad Hafid Nasrullah	80
12	Muhammad Hanif Romadhon	73	12	Muhammad	77
13	Musa Mahmud Fauzi	76	13	Muhammad Burhanudin	85
14	Mustafid Kaysan	96	14	Muhammad Daffa Syah Rizal	90
15	Nayottama Azriel Nugroho	76	15	Muhammad Sabiq	87
16	Satria Azam Putradana	80	16	Nufail Rifqi Alfarrosi	86
17	Sulaiman	65	17	Rifqy Muhamad Tri Zaky	89
18	Umar Abdul Aziz	100	18	Rijal Farras Atthabarani	87
19	Wafa Dewantara Ramadhan	70	19	Samsul Bachtiar	78
20	Zuhri	78	20	Syaifudin	76
Average		80,3	Average		82

Based on the data above, it shows that the average pretest and posttest score of both groups after 5 meetings showed an increase as well as the minimum and maximum values, but the difference that occurred between the experimental group and the control group was the average increase value and the minimum and maximum value in the experimental group. Before the treatment using the Duolingo application showed an average value of 73.9 with a minimum value of 60 and a maximum value of 95, while after 5 meetings using the Duolingo treatment, it showed an increase in the average posttest results, namely at 80.3 and an increase in the maximum value from 95 to 100 and an increase in the minimum value from 60 to 65. From the description above, it shows a significant change in the test conducted to measure vocabulary and reading comprehension in English lessons using the application media.

On the other hand, in the control group, it also showed an increase, but the increase was not too significant, from an average of 80 to 82 in the post test with a maximum value of 91 in the pretest to a value of 90 when the post test, the lowest value was seen to increase from 70 in the pretest to 75.

The description above showed that the post-test score, from experimental class (which used Duolingo) showed higher scores if it compared to the control class (which used conventional methods). So it means that the null hypothesis (H_0) is denied and the

alternative hypothesis (H_1) is accepted. This indicated that there is a gap or differences in vocabulary mastery and reading comprehension skills between students who used the Duolingo application and those who did not use the application. Therefore, the conclusion that can be drawn from the description of the table above shows that the Duolingo applications are very helpful in the teaching and learning process in English lessons, especially in vocabulary mastery and reading comprehension.

Conclusion

According to the result of research and analysis of the data, it can be concluded that the use of the Duolingo application is competent to improve English vocabulary acquisitions and reading comprehension of tenth-grade students at Jajar Islam in 2025/2026 academic year. The conclusion is provided by the increase from the average scores in the pre to post test, the experimental class (which used Duolingo) showed higher scores than the control class (which used conventional methods). Based on the finding, it can give some advices for learner, English teachers or instructor, and researchers:

1. Learner

Students are advised to use of digital applications like Duolingo outside of the classroom to reinforce and expand their English skills. Practice it individually with fun and interactive media can help improve their language skills enjoyably.

2. Teacher

Teachers are encouraged to explore and integrate digital learning tools such as the Duolingo application in their English vocabulary instruction. Teachers should guide students in using these applications effectively in the classroom setting and could give appropriate task to do outside the classroom.

3. Future researcher

Future researchers are encouraged to conduct this study by involving a larger sample or different skills (such as grammar, writing, listening or speaking). They can also compare other educational apps besides Duolingo such as Cake or Mesmerize to examine their effectiveness in English language learning.

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