

THE EFFECTIVENESS OF DUOLINGO IMPLEMENTATION TO IMPROVE STUDENTS' VOCABULARY MASTERY

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ABSTRAK

Penelitian ini bertujuan untuk menguji efektivitas Duolingo dalam meningkatkan penguasaan kosakata pada siswa kelas 8 di MTs Bustanul Aulad. Pendekatan pre-eksperimental digunakan dalam penelitian ini dengan satu kelompok pra-tes dan pascates pada sebelum dan sesudah penggunaan aplikasi Duolingo. Kuesioner juga digunakan untuk mengetahui perspektif siswa mengenai pengalaman mereka dalam menggunakan aplikasi Duolingo. 10 siswa dari kelas 8 di MTs Bustanul Aulad merupakan sampel pada penelitian ini. Hasil penelitian menunjukkan peningkatan yang signifikan dalam penguasaan kosakata, dengan rata-rata skor pascates dari 55 menjadi 85,5, serta hasil uji-T sebesar 0,0006 yang kurang dari 0,05. Pada kuesioner persepsi siswa juga menunjukkan hasil yang positif terhadap penggunaan Duolingo yang dianggap menyenangkan, menarik, dan bermanfaat untuk pengembangan kosakata siswa. Dengan begitu, hasil penelitian ini menunjukkan bahwa Duolingo merupakan aplikasi berbasis permainan bahasa yang efektif untuk meningkatkan penguasaan kosakata siswa.

Kata Kunci : Aplikasi belajar bahasa berbasis digital, Efektivitas Duolingo, dan Penguasaan kosakata.

ABSTRACT

This research aims to examine the effectiveness of Duolingo to improve students' vocabulary mastery among junior high school students grade 8 at MTs Bustanul Aulad. Pre-experimental approach was used in this research with one group pretest-posttest before and after the use of Duolingo application. Questionnaire is also used to explore students' perspectives regarding their experiences. The participant of this research were 10 students of class 8 in MTs Bustanul Aulad. Results showed a significant improvement in vocabulary acquisition, with the mean posttest score rising from 53 to 85.5, as well as a T-test result of 0.0006 which was less than 0.05. Students also expressed positive perceptions towards the use of Duolingo, which was considered fun, interesting and useful for vocabulary development. The results of this research indicate that Duolingo is an effective language game-based application to improve vocabulary acquisition among students.

Keywords: Digital language learning application, Duolingo effectiveness, Vocabulary mastery.

INTRODUCTION

English is a foreign language that has been used throughout the world,

making it easier for everyone to interact with the outside world. English becomes vital in this day and age

because it is the language used to communicate with people worldwide. English is an international language that is utilized for commerce, politics, technology, and education worldwide, English as a foreign language is very difficult to master and requires more effort because there are many parts that students find very difficult to understand. In English there are four language skills, namely, listening skills, speaking skills, writing skills, and reading skills. In addition to these four language skills that must be mastered by students, there are also basic aspects that are very important to support language skills, namely vocabulary, pronunciation, and grammar. And these three aspects must be given to students when learning English.

(Ningtyas & Reftyawati, 2024) stated that vocabulary as one area of knowledge in language, has a major influence on learners in acquiring language. Learning English in school always requires learners to understand English texts in written or spoken form. But there are still many problems faced by learners when learning English, namely the lack of vocabulary. Even though vocabulary is not easy learning, vocabulary combines memorization and speech action or answering. The problem that occurs when learning vocabulary is that its application is very low in daily life compared to the mother tongue. The problem that occurs when learning vocabulary is that its application is very low in everyday life compared to the

mother tongue. Therefore, it causes students to have difficulty increasing their vocabulary, because students memorize vocabulary from the English books they read, and will easily disappear before they try to act in speech. From these problems, it means that during learning, interesting media is needed and can improve students' vocabulary learning. So that when learning takes place later students will not feel bored, instead later they will become motivated to improve vocabulary learning.

In this modern era, technology is developing very rapidly and it will not be difficult to make the learning process more interesting and diverse. Even during the Covid-19 pandemic (Fauziah, 2021) stated that digital technology played a big role in making it easier for teachers and students in the learning process without distance restrictions. Digital application usage can be the best choice in order to gain student interest while learning. According to (Ningtyas & Reftyawati, 2024), technology has given educators access to new resources and methods of instruction. It is align with the study of (Safitri et al., 2024), which has proven that the use of technology in English class can influence students' vocabulary mastery. Nowadays, almost all students even those still in elementary school already have their own cellphones, Therefore, it is feasible for students to enhance their vocabulary through the use of mobile-assisted language learning programs (Nurhayati & Suryaman, 2023)

There are applications that can support the learning process that does not have time limitations and has a variety of features that make the learning process more interesting for students, and will not make them feel bored when using the application. Duolingo is a platform that provides language learning, especially for learning English which can be accessed through applications or websites. This duolingo application uses a gamification technique that provides written and voice learning so that it can help many people, especially students to learn English (Nurhayati & Suryaman, 2023). (Chasanah & Halim, 2024) stated that there was an increase in students' vocabulary before and after using the Duolingo application. Duolingo application can be installed on android or IOS so that everyone can use it on their respective phones. Duolingo also provides special English for its users for free, so students can take advantage of this application to improve their vocabulary. In addition to English, this software offers a number of other languages, including Italian, German, French, Dutch, Spanish, and others. Duolingo offers a number of processes, the first of which is the division of learning into multiple parts. For instance, the first unit of instruction in English covers the fundamentals, including information on basic expressions like greetings as well as fundamental structures or traits.

By using the Duolingo application as a learning method, it will

make learners able to learn vocabulary comfortably and fun. Additionally, Duolingo has the ability to pick and choose words from any challenge or content that is relevant to the student's level of proficiency and grammar (Nurhayati & Suryaman, 2023). Duolingo provides game-like learning materials that use gradual levels and challenges. So, Duolingo can make it easier for beginners and learners to learn English or to improve learners' English skills, by increasing their level if they want to continue learning and completing all the challenges.

Therefore, the researchers curious whether digital learning media can be implemented in junior high school based islamic. The purpose of this research is to examine the effectiveness of Duolingo to improve students' vocabulary mastery, especially for students grade 8 in MTs Bustanul Aulad. It is also expected to enhance students' interest toward English learning in class. The researchers will use pre-experimental design with instruments in the form of tests and questionnaires. It is expected that there will be some improvements of students' vocabulary mastery in these findings after using the Duolingo application as an English learning media.

RESEARCH HYPOTHESIS

Based on the researchers' curiosity above, the hypothesis is established as follows: "There is a significant improvement of Duolingo utilization toward students' vocabulary mastery"

RESEARCH METHODOLOGY

This research used pre-experimental design. According to (Prawiyogi et al., 2022) pre-experimental design is a research design that is only participated by one group or one class that will be given pretest and posttest.

Table 1. One-group pretest-posttest design

Pretest	Treatment	Posttest
Y1	X	Y2

Y1 : test before being given the treatment

X : Duolingo app

Y2 : test after being given the treatment

This research design will only focus on one group that will be given a treatment without any other group control. The two tests will be compare to see the improvement of students' vocabulary mastery. Ten students of grade eight in MTs Bustanul Aulad, Maja, Kab. Serang, Banten, Indonesia participated in this research.

The improvement will be measured by a pretest and a posttest. Pretest is a test before being given a treatment (the Duolingo application), and a posttest is a test after being given a treatment. The tests are given in the Google Form, they consist of 20 questions about basic vocabulary until possessive pronoun. Pretest and posttest questions are the same, but

the sequence will be rearranged. If the posttest score is higher than the pretest, it has proven that Duolingo app is effective as learning media to increase students' vocabulary mastery.

Questionnaire was also used in this research to get students' perspective after using Duolingo. Questionnaire is a collecting data technique that is held by giving a set of questions or written questions to the respondent to be answered (Taherdoost, 2021). Nine questions with likert type were given in the Google Form to the participant. The

questions asked about students' interest while using Duolingo, and its advantages and disadvantages

Data will be collected in several cycles. Cycle I, in the first meeting students had to do a pretest in order to figure out early students' vocabulary mastery before using the Duolingo app. After the pretest score came out, the researchers knew students' early competency. Then in cycle II, the researchers asked students to download the Duolingo app in browser. The researchers guided them to sign up and start the app. Students

are expected to play and learn English in the Duolingo app for a week after they came home from school until they reach unit 10. Cycle III, in the last meeting, students were given a post-test to measure their understanding after using Duolingo, and also questionnaire to ask their opinion regarding the Duolingo app to learn English after they used it for a week.

The results of pretest and posttest, and questionnaire will be analyzed using Microsoft Excel. According to (Begum & Ahmed, 2020) analysis statistics depend on the purpose of the research itself. Microsoft Excel with its data analysis tools become one of the best statistic softwares, because if the data input is wrong or inappropriate then it will not work to analyze the data, (Kumar, 2023).

RESULT AND DISCUSSION

The Improvement Of Students' Vocabulary Mastery After Using The Duolingo Application

After students were asked to complete several questions related to their vocabulary mastery in pretest and posttest, the score was came out. There are significant differences

between pretest and posttest score as can be seen in table 2.

Table2. Students' pretest-posttest score

Initial of students' name	Pretest	Posttest
H	25	80
AGP	80	100
MA	95	100
AS	20	80
LP	30	95
MAH	50	75
SAA	75	100
NW	50	75
SN	65	85
NAS	40	65

Based on the table the highest score in pretest is 95 and the lowest score is 25. Then the scores increase in posttest after using the Duolingo application. The highest score becomes 100 and the lowest score becomes 65.

To get the mean value and test the data the result must be analyze using Microsoft Excel. The researchers used data analysis tools that available in Microsoft Excel, then choose T-Test Paired Two Sample feature to measure the means of pretest and posttes and examine statistically wether the hypothesis is accepted or rejected (Kumar, 2023).

Table 3. t-Test: Paired Two Sample for Means

	<i>Pretest</i>	<i>Posttest</i>
Mean	53	85,5
Variance	634,4444444	158,0556
Observations	10	10
Pearson		
Correlation	0,61754481	
Hypothesized		
Mean		
Difference	0	
df	9	
t Stat	-5,129803007	
P(T<=t) one-		
tail	0,000309871	
t Critical one-		
tail	1,833112933	
P(T<=t) two-		
tail	0,000619741	
t		
Critical two-	2,26215	
tail	7163	

As can be seen in table 3, the mean value increases from 53 in pretest to 85,5 in posttest. And the value of T-test is 0,0006, that is less than 0,05. Based on (Aulia et al., 2020), the hypothesis was proven if the value of T-test two tails is $\leq 0,05$. So, it means the hypothesis of this research is accepted, there is a significant improvement of Duolingo utilization toward students' vocabulary mastery.

Based on the result research above, it can be stated that the Duolingo utilization is an effective way to improve students' vocabulary learning. It is in line with (Ramos, 2021) who said that, students' vocabulary achievement can be enhanced by using a learning language application. Moreover, several studies have proven

that the Duolingo application is one of the effective language learning apps to be used for language learners. Study of (Hernadijaya, 2020) showed, Duolingo application gives a good effect on students' language development, either it is used with another application or just as stand-alone. By repeating the practices for 24 hours, Duolingo succeeded in helping students' memorize 80% - 100% of vocabulary. Likewise (Kusumadewi & Widyastuti, 2021) who stated that, there is a significant influence of vocabulary mastery between an experimental class that used Duolingo application to asis students memorize vocabulary, with a control class that only used English text book as a learning media.

Besides that, the quality of questions in each vocabulary practices. Duolingo animation features also creates the process of learning English becomes more fun and interesting. Hence, the researchers want to know about students' perspective based on their experience while using Duolingo to learn English.

Students' Perspective Toward Duolingo Utilization To Learn English

The researchers used questionnaire to get the data of students' perspective related to Duolingo utilization. The questionnaire consists of students' interest while using Duolingo, and its advantages and disadvantages.

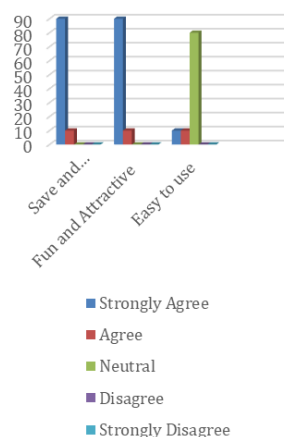


Figure 1. Students' Interest Toward Duolingo App

Based on the result data in figure 1, the majority of all respondents give positive responses. There are 90% of the respondents strongly agree and 10% agree that Duolingo application is save and comfortable to use, especially for Junior High School students. Also 90% of them perceive that Duolingo is fun and attractive app to use for learn English. Regarding the ease of Duolingo utilization, 80% said neutral. Maybe the reason is because for the Junior High School students it is a bit difficult to log in and fill in some information about the new user. And it needs the internet signal to operate the app. So, for students who are not familiar with account, email, password, and verification, they need a guidance to start this app.

On the other hand, every learning media or digital learning application has the advantages and disadvantages. Figure 2 will show the Duolingo's advantages for English learning.

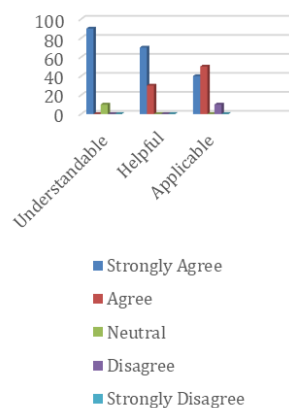


Figure 2. Duolingo's Advantages

As can be seen in figure 2, most respondents agree with the advantages of Duolingo. 90% of respondents strongly agree that the practices of Duolingo application help them to understand English language easily. Then 70% strongly agree and 30% agree that Duolingo help them in mastering vocabulary. Furthermore, regarding Duolingo as an applicable English language learning media, 40% strongly agree and 50% agree with that statement.

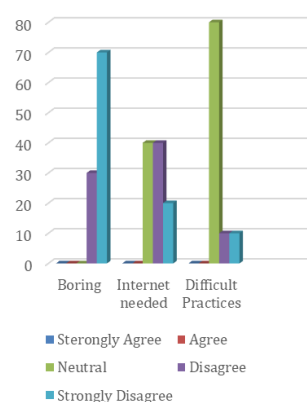


Figure 3. Duolingo's Disadvantages

The data in figure 3 shows that the majority of all respondents disagree with the statement has given. There are 70% of respondents strongly disagree and 30% disagree that the animation of Duolingo is boring. Also

many of them would not mind if they have to prepare the internet network to play Duolingo application. However, regarding of the difficulty of the practices, some respondents have their own perspective. 10% of them strongly disagree, 10% disagree, and 80% neutral. Students who have high English competency feel the Duolingo's practices are not difficult, and other students feel there are some difficult practices and easy practices as well.

Duolingo application is a good digital language learning, especially for middle school. It is equipped with variety of task types that very engaging for students then motivated them to complete the task and get the points (Erfiani & Miski, 2022). (Ridhwan et al., 2022) said that increasing students' motivation to learning is still become the difficult part of teaching. However, utilization of various learning media is very beneficial to improve students' motivation and understanding (Hazmar et al., 2022). (Chen & John', 2020) mentioned that as a gamification application, Duolingo has arranged as good as possible with its various task and direct feedback to improve students language skill in a fun way. Duolingo application provides many tasks that consist of different skills. Students can practice their speaking by recording the pronunciation of the words, sometimes they must listen the audio to answer the question (Summy State University, 2020).

Nevertheless, the weaknesses of Duolingo application as a language learning media have to be considered.

Internet needed sometimes becomes a consideration for teachers to implementing the digital language application in their learning process. For instance, maybe it is not a big problem for students who can get internet connection easily, but for them who have internet issue they cannot access Duolingo application smoothly (Urrohmah & Budianto, 2023). Then, unstability of internet connection will be a major problem to use this application (Amin, 2021). Therefore, the use of digital language applications (Duolingo) is adjusted with student needs and school facilities.

CONCLUSION

The results of this research show that Duolingo is an effective tool to improve vocabulary mastery among eighth grade students at MTs Bustanul Aulad. The vocabulary scores significantly increase, with the mean post-test score increasing from 53 to 85.5 after a week of using Duolingo. The T-test result (0.0006) was less than the 0.05 threshold, confirming that the hypothesis is accepted. These results show that Duolingo can indeed play an important role in improving vocabulary acquisition in junior high school students.

Also, the questionnaire results positive feedback. The majority of respondents stated that the app is safe and convenient to use, with 90% strongly agreeing that the app is engaging and fun. A total of 90% of respondents felt the app helped them understand English easily, and 70% of

them strongly agreed that the app was effective in helping with vocabulary acquisition. Many students found the gamified learning experience engaging and helpful for remembering new vocabulary.

Duolingo can significantly improve vocabulary acquisition and encourage positive engagement with English vocabulary learning. With some customization and support from educators and institutions, digital apps like Duolingo have strong potential to contribute to vocabulary and language skill development in a way that is fun and accessible to students at different levels of education.

For future researchers, the research can extend these findings by exploring the impact of Duolingo over a longer period of time and with a larger and more diverse sample. Investigating other age groups, educational backgrounds, or additional language learning applications may also yield insights into the wider applicability of gamified digital learning tools. Future research could also measure the effectiveness of the Duolingo app in improving students' writing or listening skills.

REFERENCES

- Amin, S. N. (2021). Gamification Of Duolingo In Rising Student's English Language Learning Motivation. *Jurnal Bahasa Lingua Scientia*, 11(2).
<https://doi.org/10.21274/ls.2019.11.2.219-236>
- Aulia, H. R., Wahjuningsih, E., & Andayani, R. (2020). Effect Of Duolingo Application On Students' English Vocabulary Mastery. *ELTR Journal*, 4(2), 131–139.
<https://doi.org/10.37147/eltr.v4i2.71>
- Begum, J. K., & Ahmed, A. (2020). The Importance of Statistical Tools in Research Work. In *International Journal of Scientific and Innovative Mathematical Research (IJSIMR)* (Vol. 3). Online. www.arcjournals.org
- Chasanah, A. Z., & Halim, A. (2024). *Cendikia: Media Jurnal Ilmiah Pendidikan The effectiveness of using duolingo as an interactive learning media*. 14(6), 638–646.
- Chen, X., & John', S. (2020). Evaluating Language-learning Mobile Apps for Second-language Learners. In *Journal of Educational Technology Development and Exchange* (Vol. 9, Issue 2).
- Erfiani, E., & Miski, C. R. (2022). The Use of Duolingo in Enhancing Students' Vocabulary Mastery at SMA Negeri 3 Bangko Pusako During Pandemic Covid-19. *Indonesian Journal of Integrated English Language Teaching*, 8(1), 55.
<https://doi.org/10.24014/ijiet.v8i1.17972>
- Fauziah, N. (2021). Pemanfaatan Akses Aplikasi Belajar pada Proses Pembelajaran di Indonesia di

- Masa Pandemi Covid-19. *Asatiza: Jurnal Pendidikan*, 2(1), 56–63. <https://doi.org/10.46963/asatiza.v2i1.214>
- Hazmar, A. A., Hazmar, R., & Marlian, M. (2022). Pemanfaatan Media Belajar dalam Meningkatkan Prestasi Belajar Siswa. *Asatiza: Jurnal Pendidikan*, 3(2), 95–106. <https://doi.org/10.46963/asatiza.v3i2.499>
- Hernadijaya, N. savira. (2020). *The Use Of Duolingo Application To Enhance Junior High School Student's English Vocabulary*.
- Kumar, D. M. D. (2023). A Study on Importance of Microsoft Excel Data Analysis Statistical Tools in Research Works. *Journal of Management & Educational Research Innovation (JOMERI)*, 1(3), 76. <https://doi.org/10.5281/zenodo.10449150>
- Kusumadewi, H., & Widyastuti, M. (2021). *The Effects Of Using Duolingo Towards Student's Vocabulary Mastery*.
- Ningtyas, D. A. P., & Reftyawati, D. (2024). Teaching Vocabulary Using the Duolingo Application in Junior High School. *Fonologi: Jurnal Ilmuan Bahasa Dan Sastra Inggris*, 2(3), 310–324. <https://doi.org/10.61132/fonologi.v2i3.960>
- Nurhayati, E., & Suryaman, M. (2023). The Implementation of the Duolingo App in Increasing Students' Vocabulary Mastery. *Jurnal Pendidikan Bahasa Inggris Undiksha*, 11(3), 258–263. <https://doi.org/10.23887/jpbi.v11i3.47287>
- Prawiyogi, A. G., Sa'diah, T. L., Safarandes, A., & Nurjanah, Q. (2022). Pengaruh Metode Suku Kata Terhadap Keterampilan Membaca Permulaan. *Jurnal Basicedu*, 6. <https://doi.org/10.31004/basicedu.v6i5.1437>
- Ramos, A. G. L. (2021). Enhancing English Vocabulary Through Digital Learning Applications. *EPRA International Journal of Research and Development (IJRD)*, 6(6). <https://doi.org/10.36713/epra2016>
- Ridhwan, M., Yeni, M., & Husna, A. I. (2022). *Asatiza: Jurnal Pendidikan*. 3(3), 172–179.
- Safitri, N. W., Aruan, R., & Prawati, A. (2024). The Effect of wordwall.net on Students' Vocabulary Mastery in Reading Narrative Text at SMK Muhammadiyah 2 Pekanbaru. *Asatiza: Jurnal Pendidikan*, 5(2), 197–205. <https://doi.org/10.46963/asatiza.v5i2.1800>
- Summy State University. (2020). Strategic Innovations Of Social Communications And Foreign Philology In Crisis Times. *Postmodern Openings*, 11(2), 120–127.

<https://doi.org/10.18662/po/11.2/165>

- Taherdoost, H. (2021). Data Collection Methods and Tools for Research; A Step-by-Step Guide to Choose Data Collection Technique for Academic and Business Research Projects. In *International Journal of Academic Research in Management (IJARM)* (Vol. 2021, Issue 1). <https://hal.science/hal-03741847v1>
- Urrohmah, L., & Budianto, L. (2023). Junior High School Students' Perception toward The Use of Duolingo as A MALL (Mobile Assisted Language Learning) for Learning English Grammar. In *Journal of English Teaching and Learning* (Vol. 2, Issue 2). <http://urj.uin-malang.ac.id/index.php/jetl>
- Pendidikan Matematika*, Volume 8
Nomor 1. Halaman 420-424.