

# THE EFFECT OF DULINGO ON EIGHTH-GRADE STUDENT'S VOCABULARY MASTERY

**Jihan Andini**

*English Education Departement Study Program, Faculty of Tarbiyah and Teacher, University Islam Negeri Sumatera Utara, Indonesia*

E-mail: [jihan0304201072@uinsu.ac.id](mailto:jihan0304201072@uinsu.ac.id)

**MaryatiSalmiah**

*English Education Departement Study Program, Faculty of Tarbiyah and Teacher, University Islam Negeri Sumatera Utara, Indonesia*

E-mail: [maryatisalmiah@uinsu.ac.id](mailto:maryatisalmiah@uinsu.ac.id)

APA Citation: Andini, J., & Salmiah, M. (2024). The effect of Duolingo on eighth-grade student's vocabulary mastery. *Indonesian EFL Journal*, 10(2), 247-254.  
<https://doi.org/10.25134/ieflj.v10i2.1008>

Received:22-03-2024

Accepted:21-05-2024

Published:30-07-2024

**Abstract:** This study investigates the impact of using Duolingo to enhance vocabulary acquisition among eighth-grade students at Taman Pendidikan Islam Junior High School in Medan. Ineffective teaching methods are the root cause of the issue of inadequate vocabulary mastering. The study employed a quantitative approach with a pre-experimental design, encompassing all pupils in the eighth grade. Both a pretest and a posttest were administered before and after a two-week period of using Duolingo in order to assess the level of improvement. The results demonstrated a substantial enhancement in students' vocabulary acquisition, as seen by the higher mean score (83.84) on the posttest compared to the pretest (52.80). The statistical study using a paired sample t-test revealed a significance value of 0.000, demonstrating a significant improvement in vocabulary learning as a result of using Duolingo. Ultimately, Duolingo proves to be efficacious in enhancing students' lexical acquisition, offering an enjoyable and engaging educational encounter, and fortifying students' retention through efficient repetition and utilisation of words in many contexts. Based on these findings, it is advised that students use the Duolingo application to increase their vocabulary at Taman Pendidikan Islam Medan Junior High School.

**Keywords:** *Duolingo, pre-experimental method, English language learning.*

## INTRODUCTION

Vocabulary refers to the complete set of words, phrases, and expressions that an individual comprehends and employs when speaking, whether verbally or in written form, in a specific language. Vocabulary encompasses all the words that an individual has acquired, comprehends the significance of, and can employ correctly within the suitable context (Jaelani & Sutari, 2020). Vocabulary is an indicator of a person's linguistic proficiency and their capacity to communicate with precision and effectiveness. Vocabulary is a crucial element of the English language, playing a significant part in comprehending written text and effectively conveying ideas through writing or speech. (Ajisoko, 2022)

Vocabulary acquisition is a crucial component in the process of language learning. Undoubtedly, vocabulary serves as the

fundamental basis for comprehending and expressing oneself in any language, including English. Acquiring a high level of vocabulary is crucial for one's educational progress. Mastery of vocabulary is a crucial aspect of English language acquisition as it facilitates the integration of the four language skills (Jiang et al., 2020)

Thornbury categorises vocabulary into six types: word classes, word families, word formation, word meaning, collocations, and homonyms. Eighth grade junior high school students are typically expected to acquire a range of vocabulary, encompassing commonly used words such as phrases, verbs, nouns, adjectives, and adverbs. These words are essential for effective communication in various contexts, including speech, reading, and writing. Vocabulary is crucial due to its ability to enhance comprehension and facilitate effective communication. Acquiring a strong vocabulary helps enhance language proficiency in many areas, including hearing, speaking, reading, and writing.

Furthermore, when learners expand their vocabulary, their academic prowess, self-assurance, and proficiency all improve. (Istiqamah et al., 2023)

The kids of Taman Pendidikan Islam Junior High School have low degree of comprehension in vocabulary. Certain students possess a comprehensive comprehension, but others continue to encounter challenges in recalling and using language. According to the data obtained from the English teacher at Taman Pendidikan Islam Junior High School Medan, the eighth grade students have a significant issue with vocabulary mastery. This is evident from the fact that many students frequently ask the English teacher to translate the learning material from English to Indonesian during lessons. Subsequently, during the direct interviews conducted by the researcher with the students of SMP Taman Pendidikan Islam Medan, it was found that five out of seven students were unable to provide satisfactory responses to the researcher's inquiries. This issue arises due to a lack of emphasis from teachers on students' vocabulary development. Students are typically instructed to just memorise language without being taught how to effectively apply it in their daily lives. Consequently, the vocabulary they have memorised is not fully internalised or utilised. An inherent drawback of the memorising method is that if the acquired vocabulary is not actively utilised in daily life, pupils are prone to experiencing a rapid decline in their ability to recall the memorised vocabulary. (Permatasari et al., 2022)

Hence, the proposed approach to address these issues is to implement supplementary educational resources that can assist students in acquiring a comprehensive vocabulary. One such resource is the use of educational platforms like the Duolingo application. Duolingo is an internet-based language acquisition tool created to assist users in acquiring new languages through an engaging and enjoyable approach. The primary objective of Duolingo is to enhance the accessibility, affordability, and effectiveness of language learning for all individuals, while maintaining a high standard of quality (Shortt et al., 2023). Duolingo offers interactive lessons for vocabulary acquisition and provides comprehensive ideas and explanations on word usage in many scenarios.

One reason why the Duolingo app might be an effective tool for enhancing pupils' vocabulary is that it offers an enjoyable and captivating learning experience. Through the incorporation of gamification, users are encouraged to actively participate in the learning process, thereby mitigating monotony and enhancing their incentive to persist in learning. Regarding

language, engaging in these play activities facilitates the connection between new words and pleasurable experiences, so enhancing both short-term and long-term memory.

Furthermore, the application provides efficient reinforcement. The fundamental principle of repetition is crucial in enhancing vocabulary. Duolingo employs machine learning algorithms to adapt practice and repetition dynamically, taking into account the user's level of proficiency. (Apoko et al., 2023) In this manner, vocabulary that requires further strengthening will be consistently presented, while those that have already been mastered will be periodically reintroduced to enhance comprehension.

(Wijaya 2016) carried out a similar study, and their findings indicated that using the Duolingo app increased students' passion for learning, (Chasanah & Halim, 2024) carried out a study on a related topic and discovered that the Duolingo program is useful for learning English.

Previous research related (Hernadijaya, N.S 2020) about "The use of duolingo application to enhance junior high school students' english vocabulary" This study explores how the use of Duolingo contributes to the improvement of foreign language vocabulary, focusing on the methods and features of the application that support effective vocabulary learning. the use of duolingo is beneficial in seventh grade English.

Furthermore, Duolingo offers a diverse range of learning environments and scenarios. Users will engage with terminology in diverse and pertinent contexts, encompassing ordinary discussions as well as specialised subjects like food, travel, or even business. By engaging in this approach, users not only acquire knowledge of the words themselves, but also gain proficiency in their practical application, so enhancing their entire communication abilities.

The purpose Of this study is to measure the effectifveness of using the duolingo application in improving vocabulary mastery of eighth grade students' vocabulary

1. Does the duolingo application have an effect on improving the vocabulary of eighth grade students' ?

## **METHOD**

This study employs quantitative research methodologies. The quantitative research method as a research method that focuses on collecting and analyzing data that can be measured numerically. (Wagner, 2020) The study population consisted of 25 children who were all VIII grade students at Taman Pendidikan Islam Medan Junior High School. These pupils were selected as subjects for the study. The researchers in this study

utilised a pre-experimental design. This design involves administering an initial test (pretest) before the treatment is given, and then conducting a final test (posttest) using the same set of

questions after the treatment has been administered. The research design is displayed in Table 2.1 below.

Table 1. *Desain One Group Pretest Posttest*

Pretest	Treatment	Posttest
$O_1$	X	$O_2$

Description:

$O_1$  : Initial test before treatment with Duolingo

X : Treatment with Duolingo

$O_2$  : Final test after treatment with Duolingo

The instrument utilised in this study was a vocabulary assessment comprising of 50 multiple-choice questions. The vocabulary included in the questions was selected in accordance with the goals and objectives of the English course at their respective level. The vocabulary were discovered in the summary glossary of the primary textbook used in the eighth grade at Taman Pendidikan Islam Junior High School in Medan. The question kinds employed include: lexical semantics, synonyms, antonyms, algorithms, word associations, and object attributes.

To ensure the data followed a normal distribution, this study used Kolmogorov-Smirnov and Shapiro-Wilk normality tests. The results obtained showed that the significance values for the pretest and posttest were greater than 0.050, indicating normally distributed data. The normality of this data is important to ensure the internal validity of subsequent statistical testing.

In order to assess the level of vocabulary proficiency among eighth-grade students at SMP TPI Medan, a series of vocabulary exams were administered. The pre-test aimed to assess the students' comprehension of the subject matter prior to any additional intervention or instruction. The examination comprised a set of fifty multiple-choice questions specifically designed to match the students' individual proficiency level. (1) The researcher observed the students' conditions and conducted direct examinations on a number of pupils to assess their degree of knowledge. (2) Established the research sample (3) Designing research instruments involves creating assessment tools that align with student study recommendations.

(4) In this case, the assessment tool is a test with 50 multiple choice questions. (5) Verifying the functionality and accuracy of the created instrument. (6) Performing a preliminary assessment to assess students' first proficiency in language. (7) Utilise the Duolingo programme to administer treatment aimed at enhancing students' proficiency in vocabulary. (8) Participants were instructed to utilise the Duolingo programme for a duration of two weeks at their own residences, dedicating 30 minutes each day to practicing. (9) Administer a post-test to ascertain if there is a discernible improvement in proficiency following the utilisation of Duolingo. (10) Formulate findings and conduct data analysis based on the acquired data.

The t-test, which may be applied with a small sample size, is the best statistical technique for comparing two means. Following the gathering of data, the researcher then carried out the data analysis to determine whether there was a change in pupils' acquisition of language following the intervention. The investigator decided to carryout a repeated actions t-test to assess the influence of the course of action. The evaluation criteria include expressed as follows: According to  $H_0$ , there isn't notable variation in the vocabulary of the kids accomplishment both prior to and following education through the Duolingo software. The standard for When the alpha level is more than 0.05 ( $\alpha > 0.05$ ),  $H_0$  is accepted.  $H_1$ , on the other hand, claims that there is a notable change in the vocabulary development of students following instruction using Duolingo.  $H_1$  app is deemed acceptable if the alpha level is smaller than 0.05 ( $\alpha < 0.05$ )

**RESULTS AND DISCUSSION**

The study population for this research, which was conducted at Taman Pendidikan Islam Junior High School in Medan, consisted of 25 children who were all enrolled in the school's 8th grade. Pre-experimental research design and quantitative methodology were employed in this study. The students took part in vocabulary learning sessions for two weeks, and data on vocabulary learning was collected using a

vocabulary test that was given both before and after the intervention period.

*Test of Normality*

One of the precondition tests for doing the Paired Sample t-test is the normality test, which determines whether or not the data is regularly distributed. The outcomes of the normalcy are as follows: evaluate the concept of understanding post-test data.

*Table 2. Normality test results*

	Tests of Normality					
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Pretest	.134	25	.200*	.933	25	.102
Posttest	.151	25	.143	.942	25	.168

\*. This is a lower bound of the true significance.

The data used in the study belonged to small-scale data (<50 data), so the Tests of Normality were Shapiro-Wilk. The analysis results show that the significance value (Sig.) of the pretest is 0.102 and the posttest is 0.168. The resulting significance value is

greater than 0.05 (>0.05), Therefore, parametric tests using the Paired Sample t-test can be performed. This indicates that there is a normal distribution of data on pupils' vocabulary mastery.

*Test of hypotesist*

The hypotheses in this study are: H0: Before and after using the Duolingo application as a teaching aid students' mastery of terminology is not significantly different. Ha: Students' vocabulary mastery before and after using the Duolingo program as a learning tool is

significantly different. Findings from the paired sample t-test analysis, which are shown in the table below as paired sample statistics, paired sample correlation, and paired sample test (sig-2tailed), were used to test the above-mentioned hypotheses

*Table 3. Paired sample statistics*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	52.80	25	18.157	3.631
	Posttest	83.84	25	9.344	1.869

The average score after using the Duolingo application is greater than before, with an average pretest score of 52.80 and an average posttest score of 83.84, as per the t-test

results above. This demonstrates that following their use of the app as a teaching tool The lexical proficiency of the students has grown.

Table 4. *Paired Samples Statistics*

		N	Correlation	Sig.
Pair 1	Pretest & Posttest	25	.968	.000

The results of the paired correlation test show that the significance level is approximately 0.000, while the sig level > 0.00 indicates that

the pretest and posttest have a relationship, or that there is a significant relationship.

Table 5. *Paired sample test*  
**Paired Samples Test**

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower Upper			
Pair 1	Pretest - Posttest	-31.040	9.401	1.880	-34.920 -27.160	-16.509	24	.000

This indicates that there is a difference in students' vocabulary mastery before and after they use the duolingo application as a learning media, leading to the rejection of the null hypothesis (Ho). The significant value of the t-test, as demonstrated by the Paired Sample Test findings, is smaller than 0.05, or 0.000.

The paired t-test was used to compare pretest and posttest scores. The results are as

follows:

The negative t value and p value <0.05 indicate that there is a significant difference between the pretest and posttest scores. This means that the use of Duolingo has a significant impact on students' vocabulary acquisition. The findings corroborate that the Duolingo app is an effective tool for improving students' vocabulary acquisition and can be implemented more widely in educational contexts.

## DISCUSSION

From the results above, this study seems to provide significant improvements in students after using Duolingo. So in this case the null hypothesis (Ho) in this study is rejected and the alternative hypothesis (Ha) is accepted.

The data collected from the vocabulary test revealed that the lowest pre-test score was 24, while the maximum score recorded was 84. Following the completion of treatment and testing, the lowest score obtained in the post-test was 68, while the maximum score achieved was

100. This demonstrates a notable alteration in value following the utilisation of the Duolingo programme. The average score of the pretest was 52.80, while the average score of the post-test was 83.80.

The research utilises small-scale data, defined as having less than 50 data points. Therefore, the Shapiro-Wilk test is employed to assess normality. The study results indicate that the pretest significance value (Sig.) is 0.102, whereas the posttest significance value is 0.168. The obtained p-value is greater than 0.05 (>0.05), indicating that the data follows a normal distribution. Thus, it is possible to do a parametric

test using the Paired Sample t-test.

The findings presented here are consistent with prior studies indicating that the Duolingo App has the potential to enhance students' English vocabulary and their proficiency in comprehending words (Anisa Dwi Tiara, M. Arinal Rahman, 2021). In addition, a further study found that using the Duolingo App is an efficient method for enhancing students' English vocabulary (Siregar, 2019, p. 61). Thus, the Duolingo App, as a tool for learning vocabulary, has proven to be significant in prior study by effectively enhancing students' English vocabulary (Erfiani & Miski, 2022)

The results of the bivariate test using Paired Sample t-test indicate that the significance value (Sig. 2-tailed) is 0.000, which is smaller than the threshold of 0.05 ( $0.000 < 0.05$ ). Therefore, it can be concluded that there is a significant difference between the pretest value and the posttest value. The t-value is negative, specifically -16.509, suggesting that the posttest value is greater than the pretest value. The Duolingo application approach has a substantial impact on vocabulary acquisition, leading to a conclusive finding.

To integrate Duolingo in student teaching practices, teachers can use Duolingo as an additional home assignment that supports the material taught in class.

The research findings show a significant improvement in students' vocabulary acquisition after using Duolingo. However, there is an aspect to note that the improvement may also be due to the fact that students spent more time learning vocabulary compared to the traditional method. The use of the app might encourage students to study more frequently.

The findings of this study strengthen the existing literature on the effectiveness of using technology in language learning. Previous studies have shown that apps such as Duolingo can improve student motivation and learning outcomes in various contexts. This study provides further empirical evidence that Duolingo can be effectively used to improve the vocabulary acquisition of secondary school students in Indonesia, particularly at Taman Pendidikan Islam Junior High School. This research supports the use of technology-based approaches in language teaching, which can serve as a model for other educational institutions facing similar challenges in student vocabulary acquisition.

Thus, this study not only confirms the effectiveness of Duolingo in improving vocabulary acquisition, but also provides practical guidance for educators to integrate this technology in their teaching practices. Ultimately, the study came to the conclusion that Duolingo was helpful in helping students improve their

vocabulary in eighth grade English since it could offer significant support during the learning process.

## CONCLUSION

It is evident from the results and discussion above that eighth grade pupils' vocabulary mastery can be enhanced by the Duolingo application. The importance of the average student score on the post-test outcomes serves as evidence for this. Researchers found two explanations for why Duolingo could affect the process of acquiring English vocabulary in this study.

To start, Duolingo is a website that gamifies language learning by offering courses covering a range of subjects along with brief instructions. Additionally, it has gamification components including skill trees, leaderboards, levels, achievements, and prizes that are dynamic visual interfaces that help students get better at learning English.

Second, there are a lot of advantages to using the Duolingo app, like flexible scheduling, clear input, easy-to-use settings, and positive reviews. The kids find this to be highly interesting because they respond so enthusiastically to this treatment. Additionally, this platform offers a clear comprehension of the information and the flexibility to study whenever they want, with each subject offering stimulating and engaging lectures, allowing students to study during downtime. Ultimately, the study came to the conclusion that utilizing Duolingo helped students improve their vocabulary in eight-grade English since it was an invaluable learning tool. Thus, this study not only confirms the effectiveness of Duolingo in improving vocabulary acquisition, but also provides practical guidance for educators to integrate this technology in their teaching practices.

## REFERENCES

- Ajisoko, P. (2022). Using Duolingo Apps To Improve English Reading Comprehension of Engineering Students in Universitas Borneo Tarakan. *Exposure : Jurnal Pendidikan Bahasa Inggris*, 11(1), 1–6. <https://doi.org/10.26618/exposure.v11i1.6452>
- Amelia, M. (2024). DUOLINGO & English Vocabulary: How Students Acquire New Vocabulary by Playing the Game. *International Journal of English Language Teaching*, 12(4), 1-8.
- Ananda, S. S., Setiaji, A., & Kustantinah, I. (2023). THE

ROLE OF DUOLINGO APPLICATION TO IMPROVE STUDENTS' VOCABULARY MASTERY AT JUNIOR HIGH SCHOOL IN ACADEMIC YEAR 2023/2024. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang*, 9(5), 1124-1133.

Anisa Dwi Tiara, M. Arinal Rahman, C. H. (2021). The Students Perception about Use of Duolingo Application for Improving English Vocabulary. *International Journal of Education, Information Technology and Others (IJEIT)*, 4(4), 690-701. <https://doi.org/10.5281/zenodo.5775915>

Apo

Aulia, H. R., Wahjuningsih, E., & Andayani, R. (2020). THE EFFECT OF DUOLINGO APPLICATION On STUDENTS' ENGLISH VOCABULARY MASTERY. *Eltr journal*, 4(2), 131-139.

Barella, Y., Fergina, A., Mustami, M. K., Rahman, U., & Alajaili, H. M. A. (2024). Quantitative Methods in Scientific Research. *Jurnal Pendidikan Sosiologi Dan Humaniora*, 15(1), 281. <https://doi.org/10.26418/j-psh.v15i1.71528>

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.

DW, L. A. (2020). The effect of Duolingo on English as Foreign Language university students' vocabulary mastery. *Revolution*, 4, 209-215.

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>

Hafifah, H. (2021). The effectiveness of Duolingo in improving students' speaking skill at Madrasah Aliyah Bilingual Batu school year 2019/2020. *Language-Edu*, 10(3).

Hernadijaya, N. S. (2020). The use of duolingo application to enhance junior high school student's English vocabulary. *RETAIN*, 8(2), 17-24.

Istiqamah, N., Latifa, A., & Larekeng, S. H. (2023). LETS Journal of Linguistics and English Teaching Studies Utilizing Duolingo Application as a Learning Media in Teaching English to Enhance the Students' Vocabulary Mastery of the Second Grade SMPIT Bina Insan Parepare. *Journal of Linguistics and English Teaching Studies*, 4(2), 145-154. <https://jurnal.stainmajene.ac.id/index.php/lets/>

Jaelani, A., & Sutari, D. R. (2020). Students' Perception of Using Duolingo Application as A Media in Learning Vocabulary. *In: Bogor English Student and Teacher (BEST) Conference*, 2, 40-47.

Jiang, X., Rollinson, J., Plonsky, L., & Pajak, B. (2020). Duolingo efficacy study: Beginning-level courses equivalent to four university semesters. *Duolingo Research Report*, 2020, 11. <https://www.duolingo.com/efficacy>

Lahmady, N., Yahrif, M., & Ibrahim, M. (2023). The Use Of Duolingo To Increase The Students' Vocabulary Mastery At Junior High School. *MERDEKA : Jurnal Ilmiah Multidisiplin*, 1(2), 293-300. <https://doi.org/10.62017/merdeka.v1i2.602>

Megawati, Hamid, R., & Sangkala, I. (2023). Improving the Vocabulary of the Students by Using Duolingo Application at the Second Grade of SMP Negeri 1 Kelara. *English Language Teaching Methodology*, 3(1), 13-19. <https://doi.org/10.56983/eltm.v3i1.176>

Nasrul, V., & Fatimah, S. (2023). The Effect of Using Duolingo Application on Students English Learning Motivation and Vocabulary Enrichment: An Experimental Research at SMKN 1 Padang. *Journal of English Language Teaching*, 12(3), 933-952. <https://doi.org/10.24036/jelt.v12i3.125020>

Permatasari, P., Sudirman, A., & Munawaroh, T. (2022). The Effect of Using Duolingo Application Towards Students' Vocabulary Mastery at the Eighth Grade of SMPN 2 Banjarsari Lebak-Banten. *Journal of English Language Learning*, 6(2), 142-148. <https://doi.org/10.31949/jell.v6i2.3624>

Pba, M., & Lamongan, U. (1994). *I Khoirotun Ni mahadalah*. 121-136.

Pratasik, G. (2022). Learning English vocabulary through the Duolingo application to help young learners' reading skill. *Journal of English Language Teaching, Literature and Culture*, 1(1), 54-60.

Purwanto, A. A., & Syafryadin. (2023). Students' Perception on Using Duolingo for Learning English Vocabulary. *JET (Journal of English Teaching)*, 9(1), 70-82. <https://doi.org/10.33541/jet.v9i1.4506>

Sakkir, G., & Syamsuddin, N. A. (2023). Students' perceptions of Duolingo Mobile assisted language learning (MALL) in learning English vocabulary. *EduLine: Journal of Education and Learning Innovation*, 3(3), 381-388.

Sari, L. P., Hastomo, T., & Nurchurifiani, E. (2023). Assessing The Efficacy Of Duolingo For Acquiring English Vocabulary Skills:

**Jihan Andini & Maryati Salmiah**

*The Effect of Duolingo on Eightg-Grade Student's Vocabulary Mastery*

- Experimental Research. *Journal of English Teaching, Applied Linguistics and Literatures (JETALL)*, 6(2), 193. <https://doi.org/10.20527/jetall.v6i2.17145>
- Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., & Akinkuolie, B. (2023). Gamification in mobile-assisted language learning: a systematic review of Duolingo literature from public release of 2012 to early 2020. *Computer Assisted Language Learning*, 36(3), 517–554. <https://doi.org/10.1080/09588221.2021.1933540>
- Suhendar, B., & Syakir. (2022). Penggunaan Aplikasi Smartphone Untuk Pengajaran Kosakata Bahasa Inggris Bagi Anak Usia Sekolah Dasar, Klender Jakarta Timur. *Community Engagement & Emergence Journal*, 3(3), 242–243.
- Syakir, A. (2020). Developing students vocabulary at elementary school by using words game. *Mahaguru: Jurnal Pendidikan Guru Sekolah Dasar*, 1(2), 38-45.
- Tsamratulaeni. (2023). Using Duolingo Application in Teaching Vocabulary at Seventh Grade of SMPN 3 Pitumpanua. *DEIKTIS: Jurnal Pendidikan Bahasa Dan Sastra*, 3(3), 190–205. <https://doi.org/10.53769/deiktis.v3i3.537>
- Wardah, W. (2022). Meningkatkan Hasil Belajar Penguasaan Kosakata Bahasa Inggris Melalui Penggunaan Model Make a Match. *LANGUAGE : Jurnal Inovasi Pendidikan Bahasa Dan Sastra*, 2(2), 138–146. <https://doi.org/10.51878/language.v2i2.1217>
- Wagner, E. (2020). Duolingo English Test, Revised Version July 2019. *Language Assessment Quarterly*, 17(3), 300–315. <https://doi.org/10.1080/15434303.2020.1771343>
- Wijaya, R. K., Yufrizal, H., & Kadaryanto, B. 2016. (2016). IMPROVING VOCABULARY THROUGH DUOLINGO APPLICATION IN CALL AT THE SEVENTH GRADE OF SMP mastered , without words communication cannot occur in any meaningful way . Lampung , it was found that there were many students who had very limited. *U-JET: Unila Journal of Engglesh Teaching*, 5(1–11), 10–11.
- Wiyati, R., & Amelia, S. (2022). STUDENTS' REFLECTION TOWARD LEARNING VOCABULARY USING DUOLINGO APPLICATION. *JELA (Journal of English Language Teaching, Literature and Applied Linguistics)*, 4(1), 17-26.
- Yazid, A., Ma'arif, M. S., & Firdaus, M. A. (2023). The Effect of Duolingo Media Application in Improving Arabic Vocabulary Mastery of Class VIII Students at MTsN 6 Nganjuk. *Al-Wasil*, 1(1), 26-49.
- Yusda, D. D., Nanda, D. S., Pratiwi, T. L. M., & Haninun, H. (2020). An Analysis Of Using Duolingo Application In Improving Students' Vocabulary Mastery At 10th Grade Of Sma Yadika Bandar Lampung. *BeyondLinguistika*, 3(2), 18–23.
- Zulfitri, K. M. (2023). The Effect of Duolingo Online Application on Students' English Vocabulary Mastery of VII Grade Class at SMP Al Razi Sinar Harapan. *Jurnal Pusat Studi Pendidikan Rakyat*, 3(2), 62–70. <https://doi.org/10.51178/jpspr.v3i2.1358>