



UTILIZING DUOLINGO APPLICATION TO ENHANCE YOUNG LEARNERS' VOCABULARY MASTERY

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ABSTRACT

This study aims to investigate the effectiveness of the Duolingo application in improving vocabulary mastery and to identify student perceptions of its use in junior high school. Using a one-group pre-test and post-test design, a pre-experimental approach was used with 34 eighth-grade students from SMP N 6 Semarang. Data were collected through a written vocabulary test and a closed-ended questionnaire, and analyzed using SPSS 26 software. The main findings demonstrated a notable rise in vocabulary scores, with the mean score rising from 62.79 to 86.24, supported by a t-test result ($t = 7.618, p < 0.05$). Most students responded positively, citing Duolingo's user-friendly interface, engaging content, and motivating features. This study can be applied in English language teaching, especially at the junior high school level, and also contributes to mobile-assisted language learning research. The novelty of this study lies in its focus on integrating gamified mobile applications into vocabulary instruction in English classrooms, providing new insight into learner engagement and digital tool effectiveness.

Keywords: *Duolingo, Teaching Media, Vocabulary Mastery, Young Learners*

1. INTRODUCTION

English holds a pivotal role in the academic curriculum across schools, being designated as the primary foreign language in Indonesia and mandated for instruction beginning in the first year of junior high school (Seroja Br Ginting & Fithriani, 2021; Zhang, 2022). This means that every student in junior high school is required to learn English as part of their formal education. Moreover, the policy of requiring English subjects be delivered in the curriculum determined by the Ministry of Education, Culture, Research, and Technology. The Ministry determines the English materials that must be delivered to the students. As mentioned by *Merdeka Curriculum*, English subject highlight the importance of mastery for skills as well as the English component (Galloway & Ruegg, 2020).

Vocabulary represents a core component of English language proficiency that students must acquire effectively. Mastery of English is crucial for learners not only as a medium of communication

with speakers of other languages but also as an essential instrument for accessing knowledge across various academic disciplines. Acquiring a strong vocabulary is foundational to English language learning, as it underpins all forms of communication. A well-developed vocabulary improves reading comprehension, supports articulate expression in both speech and writing, and aids in the interpretation of sophisticated texts (De Wilde et al., 2020; Fadilah et al., 2023). Without a strong vocabulary, students may struggle to grasp the nuances of language, limiting their ability to engage fully in academic and social interactions. Therefore, consistent vocabulary development is essential for achieving proficiency and confidence in English.

To maintain the students, keep interesting in developing their English vocabularies, the teacher must present an interactive teaching media. Interesting and interactive media can make the learning process more enjoyable and motivate students to continue learning.

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When students feel interested and engaged in learning, they will be more motivated and achieve their learning goals. One of the things that attracts students today is the use of technology in learning, such as mobile, computer, laptop, or tab-based learning. Therefore, the integrations of technology can help the teacher to make learning English especially vocabulary more interesting.

Duolingo is one of the mobile assisted English learning media that emphasizes interactive learning for students. Many students install and use Duolingo as an application. The application carries the concept of playing while learning with its attractive design and gaming features to make it more fun and easier to use (Kusumadewi & Widyastuti, 2018). To encourage them to keep practicing, users can complete various challenges, earn experience points (XP), and reach new levels (Jiang et al., 2021). Students can learn other languages because Duolingo also offers other languages, such as Indonesian, Spanish, Portuguese, Italian, German, Dutch, and English, allowing them to study all of the language options offered by Duolingo.

A growing of previous studies has shown that Duolingo plays beneficial role in the students in English learning. It has been discovered in certain research that Duolingo can assist pupils in learning grammar. This is because the students get the new experience that Duolingo offers educators and students a useful substitute for enhancing their students' English grammar, supporting the recently implemented technology-based teaching and learning (Fatmawati et al., 2023; Redjeki & Muhajir, 2020). Moreover, Duolingo can also help improve speaking skills because this feature encourages students to practice speaking, which is very important for improving speaking skills (Ajisoko, 2020; Al Ayub Ahmed et al., 2022). In addition, this also helps students improve their understanding of listening by allowing them to speak in formal English (Purwanto et al., 2022; Rosyidah et al., 2023; Sari & Octaviani,

2022). When students practice speaking in formal English, they become more familiar with commonly used grammatical structures, vocabulary and pronunciation. This habit makes it easier for them to recognize and understand these when they hear them in spoken or written form. The use of audio lessons is very important in fostering positive behaviour since students may learn to understand and analyse different kinds of facial expressions and body language.

In light of the growing need to integrate technological advancements into English vocabulary learning, the present study explores the impact of Duolingo on students' vocabulary mastery, alongside their perceptions of its use. To achieve these objectives, the study is guided by the following research questions:

1. How effective is Duolingo in assisting the students' vocabulary?
2. How is Duolingo perceived by the students in vocabulary enhancement?

2. METHODS***2.1 Research Design***

This study aims to investigate the effectiveness and perception of using Duolingo in enhancing students' vocabulary. To achieve this objective, the study employed an experimental research method with a quantitative research design. According to Creswell and Creswell (2017), a quantitative study is an investigation of a social or human problem that evaluates a theory consisting of variables. These variables are measured numerically and analyzed using statistical methods to determine whether the generalizations predicted by the theory hold true. Specifically, this study utilized a pre-experimental design, which involves two sets of observations: one before the experiment (pre-test) and one after the experiment (post-test). This design allows the researcher to compare

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students' vocabulary mastery before and after the use of Duolingo and determine its impact.

2.2 Participants

The study involved a total of 34 students from class 8E of SMP N 6 Semarang, Central Java, Indonesia, in the academic year 2024–2025. The sample was selected using a purposive sampling technique, focusing on one intact class for the experiment.

Table 1. Participants of The Research

Participants	Experimental Group	Total Participants
Students (SMP N 6 Semarang)	8E	34

The participants consisted of 16 male and 18 female students. During the study, students engaged in several research-related activities, such as participating in class discussions, taking vocabulary assessments, and interacting with Duolingo-based learning materials.

2.3 Instruments

To collect data, the researcher used two key instruments:

1) Written Vocabulary Test

The vocabulary test was administered twice:

- Pre-test: Given before students started using Duolingo to measure their initial vocabulary mastery.
- Post-test: Administered after the treatment to measure vocabulary improvement.

Each test consisted of 40 questions, designed to assess the students' vocabulary skills objectively.

2) Closed Questionnaire

At the end of the treatment, students were given a closed questionnaire containing 15 Likert-scale questions. The questionnaire aimed to explore students' perceptions of using Duolingo, covering aspects such as their interest, perceived benefits, and challenges while using the platform.

2.4 Procedural Steps

The implementation of the research followed five procedural steps, as illustrated in Figure 1:

- 1) Introduction to Duolingo: Students were introduced to Duolingo through an on-screen walkthrough of its website and features.
- 2) Implementation: Students engaged with Duolingo exercises regularly to improve their vocabulary. Activities were aligned with their learning level and objectives.
- 3) Monitoring and Guidance: The researcher monitored the students' progress and provided necessary support and guidance throughout the treatment.
- 4) Post-test Administration: A vocabulary post-test was administered to evaluate the improvement after using Duolingo.
- 5) Questionnaire Completion: Students filled out the questionnaire to express their perception and experiences regarding the use of Duolingo.

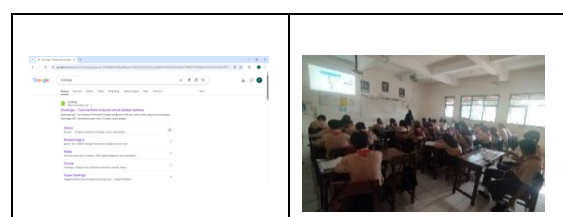




Figure 1. Procedural Steps

2.5 Data Analysis

After collecting the data from the pre-test, post-test, and questionnaire, the researcher processed and analyzed the data using SPSS version 26. Descriptive statistics were used to summarize the pre-test and post-test scores. To evaluate whether there was a significant improvement in vocabulary mastery, a paired sample t-test was conducted. According to Fiandini et al. (2024), if the p-value obtained from the t-test is below the significance level of 0.05, it indicates that the difference between pre-test and post-test scores is statistically significant. This result would support the hypothesis that Duolingo has a positive impact on students' vocabulary proficiency.

3. RESULTS AND DISCUSSION

Result

The study was carried out over the course of four weeks, from January 6th to January 31st, 2025, at SMP N 6 Semarang, involving students from class 8E as the experimental group. These participants were

selected from the eighth grade for the academic year 2024–2025. The research began with the administration of a pre-test during the first week, followed by a two-week intervention phase in which students engaged in structured vocabulary learning activities using the Duolingo application. In the final week, the post-test was administered, and participants were asked to complete a closed-ended questionnaire aimed at capturing their perceptions of the learning experience. The results and conclusions drawn from the study provided significant insights into both the effectiveness of Duolingo in enhancing vocabulary acquisition and the students' attitudes toward integrating digital tools in language learning.

The Impact of Duolingo Application on Young Learners' Vocabulary Mastery

As stated in the first research questions, the purpose of this study was to ascertain whether the pre-test and post-test scores of the students following the application of the treatment differed significantly. The following is analysis the findings are displayed:

Table 2. Descriptive Statistics

	N	Min	Mean	Max	Std. Deviation
Pretest	34	25	62.79	90	13.976
Posttest	34	31	86.24	100	14.340

Based on the descriptive statistics in Table 2, the scores on the pre-test and post-test increased significantly. A total of 34 participants took both tests. The average pre-test score of 62.79 shows that the initial ability of participants is in the sufficient category, with 25 as the minimum and 90 as the maximum score. After the treatment, the average post-test score increased to 86.24, with a score of 31 at the lowest and 100 at the highest. This indicates a rise in participants' understanding after the intervention was given. This average increase of 23.45 points shows the favourable effects of the given medication. Although the

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standard deviation on the post-test increased slightly from 13.976 to 14.340, this indicates that the variation in scores between participants remained high.

Table 3. Paired Sample T-Test

	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pretest-	-	17.941	-	33	.000
posttest	23.441		7.618		

The paired sample t-test findings using SPSS 26 showed that the Sig. (2-tailed) value was 0.000, as shown in Table 3. According to the criteria for hypothesis testing, the alternative hypothesis (H_a) is accepted and the null hypothesis (H_0) is rejected if the Sig. (2-tailed) value is less than 0.05. In this instance, it can be said that H_a is approved while H_0 is denied since $0.000 < 0.05$. This suggests that there is a statistically significant difference between the pre-test and post-test results. Furthermore, hypothesis testing can also be interpreted by comparing the obtained t-value with the critical value from the t-distribution table (t-table). As presented in Table 3, the t-count was -7.618 with degrees of freedom (df) = 33. At a significance level of $\alpha/2$ ($0.05/2$) = 0.025 (for a two-tailed test at 5% significance level). This value served as a primary reference point for locating the

corresponding t-value in the t-distribution chart.

Table 4. The Result of Paired Sample T-Test

N	t-count	t-table	Sig	α	Decision
34	7.618	2.034	.000	0.05	H_0 rejected

The result of the t-count in the paired sample was $7.618 > 2.034$. In this investigation, a significance level of 0.05 was employed. Given that the significance value ($.000$) < 0.05 and the t-count $>$ t-table, as indicated in Table 4, it can be said that H_a was accepted and H_0 was rejected. Following treatment with the Duolingo application, there was a significant difference between the students' pre-test and post-test results, according to the results of the hypothesis test. This indicates that using Duolingo helped the students become more proficient in vocabulary mastery.

The Students' Perceptions toward Duolingo Application in Vocabulary Mastery

This second discovery came from the results of the closed-ended questionnaire that the students were given by the researcher. The closed-ended questionnaire concerned the students' perceived toward in their vocabulary enhancement on the Duolingo application.

Table 5. Students' Perceptions toward Duolingo Application

No	Items	Options				
		SA (%)	A (%)	UND (%)	D (%)	SD (%)
1	Duolingo helps me learn new English vocabulary words easily.	50	50	0	0	0
2	The lessons on Duolingo are interesting and keep me engaged.	50	44.1	5.9	0	0
3	I find it easy to use Duolingo for learning vocabulary.	41.2	5.9	2.9	0	0
4	Duolingo gives me enough practice to remember new vocabulary words.	32.4	64.7	2.9	0	0
5	I feel motivated to complete Duolingo lessons regularly.	58.8	29.4	11.8	0	0
6	The vocabulary activities on Duolingo are enjoyable.	52.9	44.1	0	2.9	0
7	I have seen an improvement in my English vocabulary since using Duolingo.	23.5	67.6	8.8	0	0
8	The feedback from Duolingo helps me understand my mistakes in vocabulary learning.	29.4	67.6	2.9	0	0

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9	I find Duolingo's exercises useful for practicing English vocabulary.	38.2	67.6	2.9	0	0
10	The app provides clear explanations for the vocabulary words I learn.	38.2	58.8	2.9	0	0
11	Duolingo is a better tool for learning vocabulary compared to traditional methods like books.	38.2	47.1	11.8	2.9	0
12	I feel confident using the vocabulary I learn on Duolingo in daily conversations.	11.8	67.6	20.6	0	0
13	The repetitive nature of Duolingo helps me memorize new vocabulary.	29.4	55.9	11.8	2.9	0
14	Duolingo's visual aids pictures, icons help me learn vocabulary faster.	26.5	67.6	5.9	0	0
15	I would recommend Duolingo to my friends for learning English vocabulary.	50	44.1	5.9	0	0

The analysis of the closed-ended questionnaire, comprising fifteen items focused on students' perceptions of using the Duolingo application to enhance vocabulary acquisition, revealed overwhelmingly positive responses. For the first item, all respondents were in agreement, with 50% strongly agreeing and 50% agreeing that Duolingo effectively aids in learning new English vocabulary with ease. Similarly, the second item showed that 50% of students strongly agreed and 44.1% agreed that the lessons are engaging and interesting, though 5.9% remained neutral. In response to the third statement, a combined 97.1% (41.2% strongly agree, 55.9% agree) affirmed that Duolingo is user-friendly for vocabulary practice. The fourth item reflected that 32.4% strongly agreed and 64.7% agreed the platform offers ample practice to reinforce new vocabulary, indicating its perceived effectiveness. On the topic of motivation (fifth item), a significant portion (58.8% strongly agree, 29.4% agree) expressed that Duolingo motivates them to engage with the lessons consistently, while 11.8% were neutral.

In terms of enjoyment, the sixth item showed that 52.9% strongly agreed and 44.1% agreed that the vocabulary activities are enjoyable, with only a single student (2.9%) disagreeing. Regarding perceived progress, the seventh statement demonstrated that 91.1% (23.5% strongly agree, 67.6% agree)

noticed improvements in their vocabulary skills. The eighth item emphasized the value of feedback, with 29.4% strongly agreeing and 67.6% agreeing that Duolingo's feedback mechanism assists in identifying and understanding vocabulary errors. The ninth item further supported this, as 38.2% strongly agreed and 67.6% agreed that Duolingo's vocabulary exercises are beneficial, with only one student undecided.

As for the clarity of instruction, the tenth item showed a favorable response: 38.2% strongly agreed and 58.8% agreed that the app provides clear and comprehensible vocabulary explanations. The eleventh item compared Duolingo with traditional learning methods, where 38.2% strongly agreed, 47.1% agreed, while 11.8% were neutral, and 2.9% disagreed, indicating a general preference for the digital approach. The twelfth item, focusing on confidence in real-life application, saw slightly lower strong agreement levels 11.8% strongly agreed and 67.6% agreed, with 20.6% undecided, hinting at some hesitation in transferring passive knowledge to active use. The thirteenth item highlighted the impact of repetition, with 29.4% strongly agreeing and 55.9% agreeing that Duolingo's repetitive structure aids memory retention, while 14.7% were neutral or disagreed.

For the fourteenth statement, regarding the role of visual aids, 26.5% strongly agreed and 67.6% agreed that

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images and icons accelerated vocabulary learning. Lastly, the fifteenth item revealed high overall satisfaction, as 50% strongly agreed and 44.1% agreed they would recommend Duolingo to peers. In summary, the data reflects a generally high level of student approval regarding Duolingo's usability, effectiveness, and motivational appeal in vocabulary learning, although some students indicated uncertainty when it came to applying vocabulary in real-world communication.

Discussion

This study set out to examine the efficacy of Duolingo as a digital learning tool for enhancing vocabulary acquisition among young learners, while also exploring their perceptions of its usage. Overall, the findings revealed a marked improvement in students' vocabulary performance following the use of the Duolingo application. Notably, students' scores increased after engaging with the app, and the responses from the closed-ended questionnaire indicated that learners had a positive experience using Duolingo to support their vocabulary development.

Empirical evidence from the study confirmed a significant enhancement in students' vocabulary mastery after the intervention. The mean score on the pre-test was 62.79, which rose to 86.24 on the post-test, yielding an average gain of 23.45 points. This notable improvement suggests that Duolingo contributed meaningfully to students' understanding and retention of vocabulary. The statistical analysis using a paired-sample t-test further supported this finding, producing a t-value of 7.618 with a significance level of 0.000 ($p < 0.05$). Therefore, the study concludes that Duolingo is an effective tool for improving vocabulary mastery among the 8E students of SMP N 6 Semarang during the 2024–2025 academic year.

This study found that junior high school students significantly improved their

vocabulary mastery through the use of Duolingo. This supports previous research indicating that mobile-assisted language learning (MALL) platforms like Duolingo enhance vocabulary acquisition through engaging and interactive experiences (Loewen et al., 2019; Saraswati et al., 2021; Shortt et al., 2023). Duolingo's gamified features such as points, levels, and streaks boost motivation, while immediate feedback helps learners identify and correct errors (Yousefpoori-Naeim, 2023). Repetitive exposure further strengthens word retention.

Duolingo also offers adaptive and personalized learning paths, allowing students to learn at their own pace and according to their interests, aligning with self-directed learning theory Hamma et al. (2025) and supported by Smith et al. (2024). The app's bite-sized lessons match adolescent learners' attention spans and fit easily into school routines (Fathi et al., 2024; Sudana et al., 2023). Its multimodal format combining text, audio, and visuals supports deeper vocabulary processing and memory retention (Linder & Falk-Ross, 2024; He et al., 2024; Li, 2024).

Students' perceptions were largely positive; they found Duolingo fun, easy to use, and motivating. This reflects findings from Suryanto (2024) and Ouyang et al. (2024), who reported increased engagement with gamified apps. The user-friendly interface encouraged independent learning, boosting confidence (Alberth, 2023). Students also appreciated Duolingo's usefulness for classroom learning and exam preparation and felt that the low-stress environment supported their persistence (Loewen et al., 2020; Yundayani et al., 2023).

Nonetheless, Duolingo has limitations when used in isolation. While effective for vocabulary recognition and basic sentence building, it lacks depth in contextual usage and academic language (Rama et al., 2023; Jaya et al., 2025). Therefore, teacher-led instruction and communicative activities remain essential.

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Duolingo should be used as a complementary tool, not a standalone method (Lesiana et al., 2023; Apoko et al., 2023). Teachers should monitor student progress and integrate Duolingo with guided practice and real-life communication tasks.

In conclusion, Duolingo is a valuable tool for enhancing vocabulary learning among junior high school students due to its gamified, personalized, and multimodal features (Andini, 2024; Apoko et al., 2023; Aulia et al., 2020). However, for comprehensive development, it should be part of a blended approach supported by teacher guidance and interactive classroom learning. Future studies may explore combining Duolingo with AI-powered tools to further support personalized and meaningful language instruction.

4. CONCLUSION

The findings of this study indicate that students' vocabulary acquisition significantly improves when Duolingo is used as a learning tool, as reflected by the substantial increase in post-test scores and the positive perceptions reported by students. The interactive features and gamified approach of Duolingo successfully enhance student engagement and motivation, making the vocabulary learning process more effective and enjoyable. These outcomes suggest that traditional teaching methods can be strengthened by integrating technology-based applications such as Duolingo into English language instruction. Moreover, the students' favorable attitudes toward Duolingo also highlight its potential to support the development of other language skills, including speaking, listening, and grammar.

In light of these findings, future teaching strategies are encouraged to incorporate Duolingo into classroom activities, particularly through group-based or collaborative projects. This blended approach could help bridge the gap between passive vocabulary knowledge and active language use in real-life communication. Furthermore,

additional research is recommended to examine the long-term retention of vocabulary learned through Duolingo and its effectiveness across various age groups and language proficiency levels. Future studies could also investigate Duolingo's impact on other language competencies such as academic writing and speaking fluency, compare its effectiveness with other language learning applications, and explore the integration of Duolingo within project-based or task-based learning models. Additionally, examining the role of teacher support and facilitation in app-based learning environments would provide valuable insights into maximizing student outcomes. Overall, educational technologies like Duolingo have the potential to significantly enhance language learning when thoughtfully integrated into broader pedagogical frameworks.

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