PROJECT
(Professional Journal of English Education)
Volume 8, No. 3, May 2025
p–ISSN 2614-6320
e–ISSN 2614-6258

The Effect of Using the Memrise Application on Improving Vocabulary Mastery of Senior High School Students

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Abstract

This research evaluates the effectiveness of using the Memrise application in improving the vocabulary mastery of the second-year students of SMAN 5 Pekanbaru. Employing a pre-experimental design with a pre-test and post-test approach, the research involved a sample of 40 students who underwent vocabulary assessments before and after treatment with the Memrise application. The findings revealed a significant improvement in students' vocabulary mastery, with the average score increasing from 76.80 (pre-test) to 88.90 (post-test). Statistical analysis using a paired sample t-test demonstrated a significance value of <0.001, confirming the positive effect of the Memrise application on vocabulary acquisition. The research highlights Memrise application as an effective digital tool for fostering vocabulary development, offering teachers and students a modern, interactive learning platform. Recommendations are provided for integrating such applications into classroom teaching to enhance language learning outcomes.

Keywords: Memrise Application; Vocabulary Mastery; Senior High School Students

INTRODUCTION

In the 21st century, technology has become a crucial part of human life, significantly transforming various sectors, including education. Advances in Information and Communication Technology (ICT) have revolutionized teaching and learning processes, providing innovative tools and resources to enhance student engagement and performance. In the context of English language education, ICT-based learning has gained prominence as it facilitates flexible, interactive, and effective learning experiences for students. Isnani (2019) stated that the use of ICT has changed the way learners learn, teach, and interact in education settings. In the context of teaching and learning English, ICT has emerged as a provider of resources and tools to support the learning process. According to Mehrabian (2019), language is also closely connected to learning because the learning methods are the most crucial component of learning languages. In learning English, there are many components that must be mastered, especially vocabulary. Vocabulary is a collection of words that contain meanings and are used by people around the world to communicate by expressing opinions, feelings, or statements. Indrasari (2018) stated that vocabulary mastery is a fundamental aspect of language learning, serving as the foundation for developing communication skills in listening, speaking, reading, and writing. According to Gruneberg and Sykes (1991) in Susanto (2017), vocabulary divided into two types: active vocabulary and passive vocabulary. Active vocabulary refers to the words that a person can use easily and confidently in speaking or writing, meaning these words are actively used in communication. On the other hand, passive vocabulary includes words that a person can recognize and understand when reading or listening but may not use often in their own speaking or writing. These words are understood when encountered but are not frequently used in active communication.

According to Hatch & Brown (1995) in Nasution (2023), vocabulary is categorized into two types: receptive vocabulary and productive vocabulary. Receptive vocabulary refers to the words that a person recognizes and understands when reading or listening. It serves as the foundation for language comprehension, making it easier to engage in conversations, understand written or spoken content, and grasp the meaning conveyed through language. However, having a strong receptive vocabulary does not necessarily mean that a person can actively use these words in speaking or writing. In contrast, productive vocabulary consists of words that an individual can actively use in communication. A person with a well-developed productive vocabulary is able to recall, select, and apply these words effectively in real-life speaking and writing situations.

Therefore, Maskor (2016) stated that productive vocabulary can be regarded as an active process because learners may produce words to express their thoughts to others. In contrast to receptive vocabulary, which is concerned with absorbing words while reading or listening, productive vocabulary focuses on the active use of words in communication, including the ability to select appropriate words to convey messages effectively and clearly to listeners or readers. It can be concluded that in language learning, acquiring both receptive and productive vocabulary is essential, as it enables learners to speak and write more fluently, expressively, and in greater detail in the language being learned.

Moreover, Widjaja (2002) in Syarifudin (n.d.) divided vocabulary into two types: content words and function words. Content words provide the main meaning in a sentence, referring to things, actions, and qualities, and are usually the most crucial words for understanding a sentence. These include nouns, verbs, adjectives, and adverbs. In contrast, function words serve to build the structure of a sentence by connecting content words and clarifying relationships between them. Although crucial for grammatical structure, function words carry little inherent meaning.

Memrise is an application that can be used to help sudents improve their vocabulary mastery. Ed Cooke and Greg Detre founded it in 2010 and gained popularity for its innovative approach to language learning and memorizing. The Memrise application can be downloaded from the Playstore app on any android device or accessed via the URL www.memrise.com. Memrise offers spoken lessons, written dictation, and exercises with audio, pictures, and video. According to Karjo & Andreani (2018), Memrise's over 150 language courses are available in 25 languages, including English, Arabic, Chinese, Dutch, Danish, French, German, Indonesian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Vietnamese, and Turkish. Memrise is a free online learning application that is good, fast, interesting, and of high quality.

Melati (2019) mentioned that the Memrise app uses flashcards, but not model words or translations, that include memory aids in the form of short phrases or rhymes that are easy to remember. Karjo & Andriani (2018) categorized the challenge features or items in the Memrise app into five types: word translation, flashcards, audio choice challenges, typing challenges, and phrase translation. The word translation challenge is the easiest in the Memrise app. In this type of challenge, users are typically presented with a word in one language and required to translate it into another. The Memrise app provides four to six answer boxes, and users must select the box that corresponds to a meaning similar to the queried word. If the user answers correctly, the app displays a large check mark.

Following the word translation challenge, a flashcard will appear. Flashcards are a widely used learning tool, and in the context of the Memrise app, they present a word or phrase on one side of the card with its translation or definition on the other. The purpose of this item is to assist users in remembering words they have previously learned. The audio choice challenge likely involves listening exercises. Users may hear a word or phrase spoken in the target language and must then select the correct translation or meaning from multiple options. Users can

individually select and listen to each audio clip to find the answer. After selecting the appropriate response, users must click "next," and the answer key is immediately displayed, with green indicating the correct answer and red indicating the incorrect one.

In the typing challenge, users are frequently presented with a word or phrase in one language and are required to type the correct translation or response in the target language. This challenge helps improve both listening and writing skills. Similar to word translation, the phrase translation challenge involves translating complete phrases or sentences from one language to another. There are five answer choices displayed beneath the question, each containing a word from the response, offering different translations. This type of challenge is particularly beneficial for learners who aim to enhance their ability to understand and use complete sentences in a new language. Here are several types of activities in the Memrise application that have been found useful for learning vocabulary based on previous research: Based on Taebenu (2021), one of the activities in the Memrise application is learning words or phrases through multiple-choice exercises. Students practice words or phrases they have studied by selecting the correct options. The goal is to reach specific targets set for the exercises. Following this, students move on to arranging words or phrases to form sentences, aiming to create original sentences in the target language. Their work is then evaluated by the teacher or researcher. Additionally, students engage in quick memorization of learned words and challenge themselves with difficult ones to evaluate their proficiency.

According to Esmaeili (2020) students are divided into two groups: one used the Memrise app, while the other had traditional teaching methods. Both groups took a pre-test, then attended eight educational sessions at the school twice a week, each lasting about 90 minutes. Both groups participated in the school's regular sessions, but the Memrise group used the app for the last twenty minutes of class and at home, guided by teachers. The other group didn't use any mobile apps. To ensure the Memrise group used the app at home, teachers asked for feedback after each session. After three weeks, a follow-up post-test lasting 20 minutes was conducted for both groups.

Based on the findings of this study from Nuralisah (2020), it is proven that using the Memrise application is an effective method for improving students' language ability. This application can be implemented twice in one research project. In the first treatment, students are presented with vocabulary words along with their meanings, which begins the memorization process. The following session includes a quiz to relate the words they had memorized before. When implementing this application, teachers should consider the topic's relevance. Engaging topics increase student interest, motivation, and ease of word memorization.

Katemba (2019) stated that students' in Indonesia a have difficulty mastering vocabulary because English differs from the Indonesian language in its structure, pronunciation, and vocabulary. The problem of this research is based on observations that the researcher has made while implementing the School Introduction Program (PLP) in SMAN 5 Pekanbaru, which was carried out in September–December 2023. The researcher identified several issues among the students of Class XI Medical 4, including challenges in acquiring English vocabulary and difficulties in translation. This is why numerous studies and several methods have been conducted to improve students' vocabulary mastery.

METHOD

This research used a pre-experimental research design in one class using quantitative methods. Quantitative method is controlled, obstructive, objective, and product-oriented and aims at quantifying the variation of a certain situation, issue, or phenomenon (Kandel, 2020). The researcher used pre-experimental design, which was applied in one group pre-test and post-test design. One group pre-test post-test design involves measuring or observing a single group not

just after being subjected to a treatment of some kind, but also before (Fraenkel et al., 2012). The population of this research consisted of all eleventh-grade students at SMAN 5 Pekanbaru for the 2024/2025 academic year, totaling 480 students across 12 classes. This research used purposive sampling because the sample was specifically selected based on a specific criterion, namely the students of Class XI Medical 1 at SMAN 5 Pekanbaru. The research began with a pre-test to assess the students' starting level of vocabulary mastery before the treatment. Following the pre-test, students participated in four treatment sessions using the Memrise application. During these sessions, students engaged in interactive learning activities such as vocabulary practice, quizzes, and word-building exercises provided by the application. The sessions focused on specific vocabulary themes, such as daily activities, professions, and travel, allowing students to learn pronunciation, spelling, and sentence construction. After the treatments, a post-test was conducted to evaluate the improvement in students' vocabulary mastery. The data collected from the pre-test and post-test were analyzed using the Statistical Product and Service Solution (SPSS 27) software. After administering the post-test, the final stage was to evaluate whether the hypothesis was accepted or rejected. A paired sample t-test was performed to determine the significance of the difference between the pre-test and post-test scores. Additionally, descriptive statistics, including mean and standard deviation, were calculated to provide a detailed analysis of the results. The findings were used to evaluate the effectiveness of Memrise as a learning tool for vocabulary improvement.

RESULTS AND DISCUSSION

Results

This section presents the results of the research conducted, focusing on the effect of using the Memrise application on improving students' vocabulary mastery.

Table 1. Total of Students' Pre-Test and Post-Test Scores

No	Initial Name of the Students	Score	
		Pre-Test	Post-Test
1.	SMH	72	86
2.	AN	80	94
3.	SPR	72	82
4.	JA	70	82
5.	APR	80	88
6.	JTO	78	94
7.	AZ	68	80
8.	MGR	80	96
9.	FH	76	96
10.	AKF	76	96
11.	MA	80	94
12.	NTA	78	92
13.	MHIM	78	96
14.	FSF	74	88
15.	CAN	82	92
16.	AZA	82	96
17.	ZA	80	90
18.	CQD	80	90

19.	JAS	82	94
20.	IVR	74	82
21.	APK	84	94
22.	NDR	72	80
23.	LWN	80	98
24.	NV	72	82
25.	KPA	74	82
26.	JN	76	84
27.	JK	74	86
28.	IFA	78	88
29.	ZA	80	92
30.	AN	76	82
31.	TATS	78	86
32.	AB	78	90
33.	APY	82	90
34.	KAP	74	88
35.	FAS	70	88
36.	MRKL	74	84
37.	AP	76	92
38.	CCH	78	86
39.	DKZ	80	90
40.	AP	74	86
	Total	3.072	3.556
	Mean	76.80	88.90

Based on the table presented, the total pre-test score of the students was 3.072 with an average of 76.80, while the total post-test score was 3.556 with an average of 88.90. Here is a bar chart that represents the total scores of 40 students across six test categories, illustrating the improvement in their performance from the pre-test to the post-test.

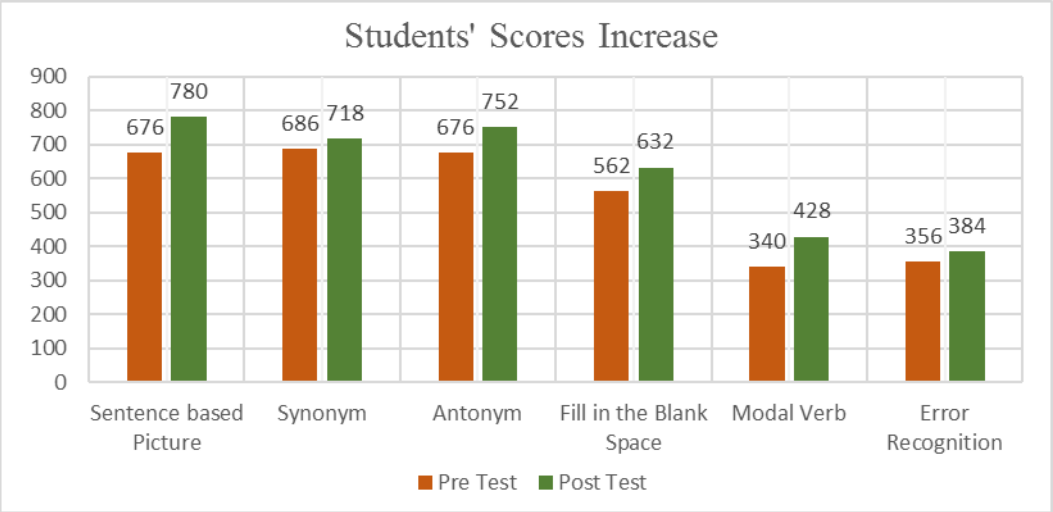

Figure 1. Students' Scores Increase

The data above presents the total scores of 40 students across six test categories, each with a different number of questions. The categories *Sentence Based on Picture*, *Synonym*, and *Antonym* each contain 6 questions, while *Fill in the Blank Space* consists of 5 questions, *Modal*

Verb includes 4 questions, and *Error Recognition* has 3 questions. The total scores are calculated by summing the results of all 40 students, and the increase is determined by comparing the pretest and posttest scores.

The analysis reveals that the category with the highest improvement is *Modal Verb*, with a percentage increase of 22.00%, followed by *Fill in the Blank Space* at 14.00%. These categories reflect the most challenging aspects, as students started with a lower understanding in the pretest but showed significant improvement after receiving treatment. The categories *Antonym* and *Sentence Based on Picture* showed increases of 12.67% and 10.67%, respectively, while *Error Recognition* had a smaller increase of 9.33%. In contrast, *Synonym* showed the smallest improvement, with a 5.33% increase. This is not because the category is difficult, but because it was relatively easy for the students. Most answered correctly in the pretest, leaving little chance for improvement in the posttest.

Overall, the data demonstrates that the learning process had a positive impact, with varying levels of success across categories. Categories with significant improvement indicate that students were able to overcome their greatest challenges through effective learning, while the easier categories showed stable understanding from the beginning.

Descriptive statistical measurements were conducted to explain and summarize the general characteristics of the research data, including the sample size, minimum value, maximum value, mean, and standard deviation. Based on the descriptive statistics table below, the following can be observed:

1. In the pre-test session, there were 40 students with a minimum score of 68, a maximum score of 84, a mean score of 76.80, and a standard deviation of 3.864.
2. In the post-test session, there were also 40 students with a minimum score of 80, a maximum score of 98, a mean score of 88.90, and a standard deviation of 5.183.

Table 2. Descriptive Statistics of Pre-test and Post-test

	N	Minimum	Maximum	Mean	Std.Deviation
Pre-Test	40	68	84	76.80	3.864
Post-Test	40	80	98	88.90	5.183
Valid N	40				

The Result of Normality Testing Using SPSS

This test is conducted before performing the t-test to determine whether the data are normally distributed. In parametric statistics, a normal data distribution is an essential requirement. The researcher used the *Shapiro-Wilk* normality test, as the sample size was below 100, specifically 40 students, with the following decision-making criteria:

If the significance value (Sig) > 0.05 [normally distributed data].

If the significance value (Sig) < 0.05 [data is not normally distributed].

Tabel 3. Result of Normality Testing

	Kolmogorov-Smirnov[a]			*Shapiro Wilk*		
	Statistic	df	Sig.	Statistic	Df	Sig.
Pre_test	.147	40	.030	.957	40	.130
Post_test	.112	40	.200	9.45	40	.053

Based on the results of the normality test using SPSS, the significance value for the pre-test is 0.130 (> 0.05), and for the post-test is 0.053 (> 0.05). Therefore, it can be concluded that the data are normally distributed, as the significance values are greater than α = 0.05 (5%).
The researcher used a hypothesis test to compare the pre-test and post-test results through a paired sample t-test in IBM SPSS Statistics. The paired sample t-test was conducted to determine whether there was a significant difference in the average scores between the pre-test and post-test results.

Table 4. Result of Paired Sample Test

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pre_test – Post_test	-11.600	3.395	.537	-12.686	-10.514	-21.608	39	<.001

Based on the paired sample test output table above, a Sig. (2-tailed) value of <0.001, which is less than 0.05, was obtained. Therefore, H0 is rejected, and Ha is accepted. This indicates that there is a significant effect of using the Memrise application on improving vocabulary mastery of the second-year students of SMAN 5 Pekanbaru.

Discussion

This improvement is supported by the difference in students' scores before and after the treatment. The increase in students' vocabulary after the treatment is clearly shown by the average pre-test score of 76.80 and the average post-test score of 88.90. Based on the normality test results using SPSS, the pre-test significance value was 0.130 (> 0.05), and the post-test significance value was 0.053 (> 0.05). Therefore, it can be concluded that the data follow a normal distribution, as the significance values are greater than α = 0.05 (5%). Additionally, the paired sample test showed a Sig. (2-tailed) value of <0.001, which is below 0.05, leading to the rejection of H0 and acceptance of Ha. This indicates that the Memrise application had a significant impact on improving the vocabulary mastery of the second-year students at SMAN 5 Pekanbaru.
Several studies have highlighted the effectiveness of the Memrise application in improving students' vocabulary mastery. Fadhilawati (2016) found that students' mean scores increased significantly, from 60.45 in the pre-test to 86.27 in the post-test, and students had positive feedback about the application. This suggests that Memrise is an effective tool for enhancing vocabulary acquisition.
Roysdah (2018) also found significant improvement in students' mastery of irregular verbs. The z-score for the experimental class (4.475) was higher than the control class (-1.706), showing a clear difference in the post-test scores. This indicates that Memrise is especially effective for learning specific vocabulary, such as irregular verbs.
Rohim and Gumelar (2022) reported a significant t-test result of 0.000 ≤ α = 0.05, showing that the Memrise application had a major effect on vocabulary mastery. Their findings further support the effectiveness of Memrise in improving vocabulary skills.
Adi and Marselina (2023) also found significant improvements, with hypothesis testing revealing a significant value of 0.025 at α = 0.05, especially in students' mastery of adjectives.

This suggests that Memrise is particularly beneficial for improving students' understanding of descriptive language. Lastly, Nasution (2023) confirmed the effectiveness of the Memrise application using a t-test with a significance level of 5%, further proving its positive effect on vocabulary mastery.

These studies together provide strong evidence that the Memrise application is an effective tool for improving vocabulary mastery, making it a valuable resource for language learning. The findings of this study add to the growing body of research supporting the use of Memrise as a useful educational tool.

CONCLUSION

The conclusion of the research indicates that the use of the Memrise application has a positive effect on improving the vocabulary mastery of the second-year students at SMAN 5 Pekanbaru. The normality test results indicate that the data is normally distributed, as both the pre-test and post-test significance values were above the threshold, which means the data met the assumption for further statistical analysis. The paired sample test revealed a highly significant result, with a very low significance value, leading to the rejection of the null hypothesis (H0) and the acceptance of the alternative hypothesis (Ha). This confirms that the Memrise application had a significant effect on the students' vocabulary mastery, as evidenced by the improved scores from the pre-test to the post-test. Therefore, the use of Memrise contributed to a measurable improvement in the students' vocabulary skills. This suggests that Memrise can be used as an effective tool to improve vocabulary mastery.Conclusion should contain the confirmation of the problem that has been analyzed in result and discussion section. The Conclusion should contain the confirmation of the problem that has been analyzed in result and discussion section. The Conclusion should contain the confirmation of the problem that has been analyzed in result and discussion section.

ACKNOWLEDGMENTS

I would like to express my deepest gratitude to Allah SWT for His endless blessings and guidance, to my parents for their unwavering support, and to my supervisors, Prof. Dr. Afrianto Daud, M.Ed. and Drs. Masyhur, M.Ed., for their invaluable guidance and encouragement throughout this research.

REFERENCES

Esmaeili, Z., & Shahrokhi, M. (2020). The Impact of Memrise Application on Iranian EFL Learners' Collocation Learning and Retention. *International Journal of Language Education*, *4*(2), 221–233. https://doi.org/10.26858/ijole.v4i2.10672

Feli Taebenu, S., & Katemba, C. V. (2021). Vocabulary Enhancement Through Memrise and Google Classroom. *Language Literacy: Journal of Linguistics, Literature, and Language Teaching*, *5*(1), 228–241. https://doi.org/10.30743/LL.V5I1.3813

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). Casual-Comparative Research. How to Design and Evaluate Research in Education, 365–391. https://www.researchgate.net/publication/265086460_How_to_Design_and_Evaluate_Research_in_Education

Hatch, E. M., & Brown, C. (1995). *Vocabulary, semantics, and language education*. 468.

Indrasari, A., Novita, D., & Megawati, F. (2018). Big Book: Attractive Media for Teaching Vocabulary to Lower Class of Young Learners. *JEES (Journal of English Educators Society)*, *3*(2), 141–154. https://doi.org/10.21070/jees.v3i2.1572

Isnani, K. (2019). A Study Among English Teacher' Perceptions: Investigating the Roles of ICT in Indonesian EFL Classroom. *ETERNAL (English, Teaching, Learning, and Research Journal)*, *5*(2), 247–253. https://doi.org/10.24252/ETERNAL.V52.2019.A6

Kandel, B. (2020). Qualitative Versus Quantitative Research. 1-Marsyangdi Journal, 1.

Karjo, C. H., & Andreani, W. (2018). Learning foreign languages with Duolingo and Memrise. *ACM International Conference Proceeding Series*, 109–112. https://doi.org/10.1145/3231848.3231871

Katemba, C. (2019). *Student Vocabulary Enhancement at Grade 10: A COmparative Study Using CALL & MALL in Indonesia*. https://essentials.ebsco.com/search/eds/details/building-10th-grade-students-vocabulary-through-reading-the-newspaper-at-smk-45-lembang-author?query=Katemba&ff%5B0%5D=ContentProvider%3ADirectory of Open Access Journals&ff%5B1%5D=ContentProvider%3AOpen Web RDK with Full Text&db=edsdoj&an=edsdoj.1006a2cf9d724f36be573e7ccb602090

Maskor, Z. M., & Baharudin, H. (2016). Receptive Vocabulary Knowledge or Productive Vocabulary Knowledge in Writing Skill, Which One Important? *International Journal of Academic Research in Business and Social Sciences*, *6*(11). https://doi.org/10.6007/IJARBSS/V6-I11/2395

Mehrabian, N., & Salehi, H. (2019). The Effects of Using Diverse Vocabulary Learning Strategies on Word Mastery: A Review. *Journal of Applied Studies in Language*, *3*(1), 100–114. https://doi.org/10.31940/JASL.V3I1.1368

Melati, M., & Herlina, H. (2019). Optimizing EIL Using "Memrise" As A Builder Students' Vocabularies. *Edu-Ling: Journal of English Education and Linguistics*, *3*(1 December), 190–206. https://doi.org/10.32663/EDU-LING.V3I1.1315

Nasution, A. (2023). The Effect of Memrise Application on Students' Vocabulary Mastery at Seventh Grade of MTs PAB 1 Helvetia. *BRIGHT VISION Journal of Language and Education*, *2*(1), 24–31. https://doi.org/10.2307/40264516

Nuralisah, A. S., & Kareviati, E. (2020). The Effectiveness of Using Memrise Application in Teaching Vocabulary. *PROJECT (Professional Journal of English Education)*, *3*(4), 494. https://doi.org/10.22460/PROJECT.V3I4.P494-500

Susanto, A. (2017). The Teaching of Vocabulary: A Perspective. *Jurnal Kata : Penelitian Tentang Ilmu Bahasa Dan Sastra*, *1*(2), 182–191. https://doi.org/10.22216/JK.V1I2.2136

Syarifudin, A., Marbun, R., & Novita, D. (2014). *An Analysis on the Students' Vocabulary Mastery A Descriptive Study on the MTS*.