



# The Effect of Learning English Vocabulary by Using Word Search Games at SMAN 5 Sorong Regency: (A Quasi-Experimental Study)

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## **Abstract**

This study examines the effect of using the Word Search game on students' English vocabulary mastery at SMA N 5 Sorong Regency. The research applied a quasi-experimental design involving two groups: an experimental class taught with the Word Search game and a control class taught using conventional methods. Data were collected through pre-tests and post-tests. The results of the independent sample t-test showed a significant difference between the post-test scores of both groups ( $t = -6.095$ ,  $p = 0.000 < 0.05$ ). The experimental group achieved a higher mean score than the control group. The findings conclude that the Word Search game has a positive effect on improving students' English vocabulary mastery.

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## **INTRODUCTION**

English is an international language. Citizens around the world use it to communicate between countries. This language has an important role in various fields, one of which is Education. The use of English is good for individuals who want to communicate with foreigners and compete in the era of globalization. Moreover, language as a means of communication plays an important role in daily activities.

In the era of globalization that we are experiencing now, technology continues to advance. With the increase in technology, English should be mastered to face various challenges in this modern era. Therefore, one of the things that an English learning educator must do is to help students communicate in English so that they can understand what is said and what is written in social media and other technology, whether it is oral or written (Mika & Mardiana, 2023).

In today's digital era, the rapid development of mobile technology has significantly influenced the field of education, including the teaching and



learning of foreign languages (Hasbullah, 2025). English, as a global language, plays an essential role in academic, professional, and intercultural communication. However, many students, particularly those in Papua, Indonesia, still face difficulties in learning English due to limited exposure, lack of resources, and insufficient opportunities to practice the language in authentic contexts.

In an educational environment, English language skills are necessary to understand academic resources and technological developments and prepare students to face the challenges of an increasingly competitive world of work (Rachmawati & Fadhilawati, 2022). In developing students' ability to master English, it is inseparable from the ability to speak. Therefore, students need to communicate in English. As a result, mastering English is considered an essential skill for students, particularly in higher education. However, traditional classroom-based instruction often provides limited opportunities for learners to practice English in authentic contexts. This situation creates a need for alternative learning resources that are more flexible, engaging, and accessible (Dabamona & Yunus, n.d, 2022).

In learning English, students must master four skills: listening, speaking, reading, and writing (Jufri, 2023). Especially with the mastery of vocabulary (Kosa-kata). Vocabulary plays an important role in the 4 skills. Vocabulary mastery is a concern as a foundation for maximum mastery of English. If students lack vocabulary mastery, it will be difficult for them to understand conversations and writing in English. Students will also have difficulty communicating orally and in writing in English, (Nuril Kaunain & Rahman, n.d, 2021). Thus, vocabulary mastery is highly prioritized so that students have good English skills.

Moreover, the use of English precisely in Sorong, one of the major cities in southwest Papua, began to take an important role in the fields of education, business, and tourism (Wael et al, 2024). In school, English is taught as one of the compulsory subjects for the younger generation facing global challenges. How important it is to master vocabulary for students, students who have enough vocabulary will have high confidence to face English tests, take international seminars, or compete with the world of work from various countries, for the advancement of technology and social media development in Sorong.

With the development of technology in Sorong, the lack of vocabulary mastery will be a big obstacle for students to develop their language skills. Students will have difficulty understanding instructions, compiling meaningful sentences, and participating in English activities, especially in Sorong as a tourism area.

Although vocabulary mastery is essential in learning English, students often face challenges in learning new vocabulary. One of the factors that causes students to lack mastery of new vocabulary is low motivation and confidence in learning English (Agung, Scholastic & Widianegara, 2022). This results in learning in the classroom being less interesting and students being less active in the classroom.



Based on observations from 2 months of Field Experience Practice at SMAN5 Sorong Regency, it turns out that some students still have difficulties learning English. They have difficulties, especially in mastering vocabulary, where many students are not able to remember and use new vocabulary effectively. Although students have learned various vocabulary in class, the application of the words in everyday conversation or written assignments. This makes students realize that learning vocabulary related to real situations is needed to improve students' language mastery.

In addition, limited vocabulary is also affected by students' ability to understand the material presented in English. Students tend to struggle when dealing with complex texts or conversations that feature new vocabulary they haven't mastered yet. English learning at school also uses traditional methods which results in students getting bored quickly with the learning process so that the material presented is not understood. Therefore, interesting learning activities are needed to overcome these challenges, such as through the use of technology or language games that can make them more active in learning and using new vocabulary.

In this study, the researcher will use an online-based game, namely the "Word Search" application as a medium used to help students learn vocabulary in class. The Word Search application is a game that allows students to search and find words hidden in randomly arranged letter boxes. The type of words hidden in the box is randomly sorted. Each word found is related to a specific topic or learning material, such as English vocabulary. Students will engage in games that encourage them to actively learn vocabulary by using this app. Word Search apps can not only increase students' engagement and interest in learning English, but they can also help them remember the vocabulary they are learning. In this way, students not only gain the ability to remember words but also gain an understanding of how they are used in different situations.

The ability to practice independently and interactively is another advantage of using this app, (Camelia et al, 2024). During their free time, students can expand their vocabulary and improve their reading and recognition skills in English. Researchers hope that the Word Search application, the learning process in the classroom more fun and effective.

By researching the importance of vocabulary mastery in learning English and the challenges faced by students in learning it, especially in SMAN 5 Sorong Regency, the use of technology, especially game-based applications such as Word Search, is expected to be an effective solution to increase students' involvement and vocabulary mastery. Therefore, this study aims to explore how the use of Word Search applications can affect students' vocabulary abilities and contribute to English learning at the high school level.

Previous research refers to studies or investigations that have been conducted and published before the current research being undertaken. This body of work serves as a foundation or reference for researchers to understand the context, theories, and findings relevant to their topic of study. This research section includes findings from previous research that are



relevant to the current topic, helping to build on existing knowledge and identifying areas for further investigation.

The first previous research was conducted by Zou, Huang, and Xie with the research title "Digital Game-Based Vocabulary Learning: Where Are We and Where Are We Going?" provides a thorough review of digital game-based vocabulary learning, examining the effectiveness of digital games in improving vocabulary acquisition. Previous research has shown that digital games can significantly enhance vocabulary knowledge by creating engaging, interactive learning environments that support repetition and contextual usage. The effectiveness of these games is influenced by factors such as game design, including mechanics, interactivity, and alignment with educational objectives. While studies have demonstrated positive outcomes, challenges such as game design quality, technological needs, and teacher preparedness remain. The review also identifies areas for future research, such as the need for longitudinal studies to evaluate long-term effects and the exploration of various game types. Overall, the article contributes valuable insights into the potential and limitations of digital game-based learning for vocabulary instruction (Jia et al., 2024).

The second previous research, Aminuddin Hashemi, with the research titled "The effects of using games on teaching vocabulary in reading comprehension: a case of gifted students" in 2021, this research discusses the influence of games in vocabulary teaching on the reader's understanding of gifted students. This research focuses on how the use of games can help gifted students master new vocabulary and improve students' understanding of reading texts. The approach used is Quasi-Experimental with pre-test and post-test designs to measure the influence of games on students' vocabulary mastery. The results of this study show that students who are taught using games show a greater improvement in reading comprehension compared to traditional methods. Games create an interactive learning environment, reduce boredom, and increase students' motivation to learn vocabulary (Hashemi, 2021).

The third previous research, Florest Quiroz, with research titled "Improving English Vocabulary Learning Through Kahoot! A Quasi-Experimental High School Experience." This study explores the effectiveness of using Kahoot! quiz application as a tool for English vocabulary learning among high school students. The researchers employed a quasi-experimental design involving two groups: the experimental group, which received vocabulary instruction through Kahoot!, and the control group, which received traditional instruction. A pre-test and a post-test were administered to evaluate vocabulary improvement. The results showed that the experimental group demonstrated a significantly greater increase in vocabulary mastery compared to the control group, with statistical findings indicating  $t\text{-count} = 3.31 > t\text{-table} = 1.677$  and  $p < 0.05$  (Flores Quiroz et al., 2021).

The fourth previous research, Fitriani, Susanto & Efrizal, with research titled "The Effect of Digital Bamboozle Game Toward Students' Vocabulary Mastery (A Quasi Experimental Research on Eighth Grade Students' at SMP Negeri 14 Seluma Regency Academic Year 2024–2025)" discusses the use of the digital game "Bamboozle" as a vocabulary teaching medium in grade VIII. This



research uses a quasi-experimental design with pre-test and post-test, and is carried out in real schools. The results showed that the experimental group that used the game obtained a significant increase in vocabulary scores compared to the control group (Susanto et al., 2025).

The final previous research, Rusmiati, Miftahul Jannah, and Wahyuningsih, the title “Enhancing Vocabulary Acquisition: A Study on the Impact of Crossword Puzzle Learning Media in an EFL Context.” This research examined the effectiveness of crossword puzzles as a learning tool to improve vocabulary mastery among eighth-grade students. A quasi-experimental design was applied, involving both pre-tests and post-tests for the experimental and control groups at a junior high school in Aceh Tengah. The experimental group was taught vocabulary using crossword puzzle activities, while the control group received instruction through conventional methods. The findings indicated that the experimental group achieved a higher average post-test score compared to the control group. The statistical analysis revealed a t-value of 2.13, exceeding the t-table value of 1.99 at a 0.05 significance level, confirming a significant improvement in students’ vocabulary mastery as a result of using the crossword puzzle (Miftahul Jannah & Kardi Wahyuningsih, 2025).

In general, the five previous studies have found that students' English vocabulary acquisition is considerably improved by game-based learning strategies. A thorough overview of digital game-based vocabulary learning (Digital Game-Based Vocabulary Learning), with an emphasis on the importance of student engagement, contextual usage, and repetition in the vocabulary acquisition process, is presented in the study conducted by Zou, Huang, and Xie (2020). This finding is consistent with Hashemi's (2021) research, which used a quasi-experimental method to demonstrate that educational games can improve vocabulary and reading comprehension, particularly in talented students.

In their study utilizing the Kahoot! quiz app as a vocabulary learning tool for high school students (Flores Quiroz et al., 2021) discovered something similar. The study found a statistically significant improvement in vocabulary scores in the experimental group compared to the control group, with a t-calculated value of 3.31, which is higher than the t-table value of 1.677, and a p-value of less than 0.05. In the meanwhile, using the digital game Bamboozle, Fitriani, Susanto, and Efrizal (2025) conducted a quasi-experimental study that revealed a notable improvement in the vocabulary acquisition ratings of eighth-grade students after the treatment.

Furthermore, Rusmiati, Miftahul Jannah, and Wahyuningsih (2025) found in their research that using crossword puzzles as an instructional tool significantly improved students' vocabulary acquisition, with a statistical analysis of  $t\text{-count} = 2.13 > t\text{-table} = 1.99$  at a significance level of  $\alpha = 0.05$ .

The similarity across all five studies is the study approach employed—a quasi-experimental design using a pre-test and post-test model—as well as the main topic of interest: the acquisition of vocabulary skills in the context of learning English as a foreign language (EFL). Furthermore, all of the studies came to the conclusion that using gaming media, whether digital or



traditional, can improve students' motivation, participation, and retention in vocabulary learning. As a result, integrating game media into English language education has shown to be a successful approach in enhancing students' learning outcomes.

#### D. Research Hypothesis

In Jim Hoy Yam and Ruhayat Taufik, it is explained that the quantitative research hypothesis is a provisional statement that states the relationship between the research variables that will be tested statistically (Yam & Taufik, 2021). Quantitative hypotheses are designed to guide research, identify causal relationships, and explain the phenomenon being studied. In quantitative research, hypotheses are generally divided into two types:

1. Null Hypothesis ( $H_0$ ): States that there is no significant relationship or influence between the independent variable and the dependent variable. The null hypothesis serves as the basis for statistical analysis and is tested to determine whether it can be rejected.
2. Alternative Hypothesis ( $H_1/H_a$ ): Indicates the existence of a significant relationship or influence between the independent variable and the dependent variable. The alternative hypothesis is accepted if the results of statistical testing provide sufficient evidence to reject the null hypothesis.

The formulation of research hypotheses must be specific, measurable, and aligned with the research objectives to ensure the validity and reliability of data analysis.

In this study, the proposed hypotheses are:

1.  $H_0$  (Null Hypothesis): The use of Word Search games has no significant effect on students' vocabulary mastery. In this case, the Word Search game is not considered more effective than conventional learning methods in helping students acquire new vocabulary. This hypothesis also assumes that other factors, such as students' individual abilities, intrinsic motivation, and learning environment, may play a greater role in influencing vocabulary acquisition.
2.  $H_1$  (Alternative Hypothesis): The use of Word Search games has a significant effect on students' vocabulary mastery. This assumption is based on the idea that Word Search games create a fun learning atmosphere, increase students' motivation, and help them recognize and memorize new words more easily. The game not only involves word recognition but also provides context and repetition that facilitate retention. Therefore, students who learn through the Word Search game are expected to show greater improvement in vocabulary mastery compared to those who learn using conventional methods.

The testing of these hypotheses is carried out using a quasi-experimental design, comparing the vocabulary mastery results between a group of students taught using the Word Search game and a group taught using traditional methods ((NumberAnalytics, 2025). The analysis of pre-test and post-test data will serve as the basis for determining whether the null hypothesis should be accepted or rejected, thereby contributing to a deeper



understanding of the effectiveness of game-based learning methods in English language teaching.

## METHOD

### Research Approach and Type

In the study entitled "The Effect of Learning English Vocabulary by Using 'Word Search' Games at SMAN 5 Sorong Regency (A Quasi-Experimental Study)". The researcher used a quantitative approach. Quantitative research is an experimental method that uses quantitative data in the form of numbers, graphs, tables, and data analysis to test hypotheses that have been determined (Syahroni, 2022). This approach was chosen because this study aims to measure the influence of the use of the "Word Search" game on the vocabulary mastery of class X students. The data obtained is presented in the form of numbers, which are then analyzed by statistical techniques to test the influence of the use of the "Word Search" game on the vocabulary mastery of the research hypothesis of class X

The type of research used is Quasi-Experimental. The researcher will involve two groups of students, namely an experimental group that uses the "Word Search" game in vocabulary learning and a control group that uses the traditional method. In this study, the researcher used a Pre-Test and Post-test control group design in which both groups were given an initial test to measure their initial ability along with the group, and then were with a final test (post-test) to see the difference.

The researcher analyzed the data obtained from the experimental class and the control class using SPSS Version 26.

Class	Pre-Test	Independent Variabel	Post-test
Experiment	Y <sub>1</sub>	X <sub>1</sub>	Y <sub>2</sub>
Control	Y <sub>1</sub>	X <sub>2</sub>	Y <sub>2</sub>

Notes:

Y1: Pretests will be given before the application of the game in the experimental class and the control class.

Y2: Post-test will be given after the application of the game to the experimental class and the control class.

X1: Application of games in experimental class.

X2: Conventional Method in control class.



## **Research Population and Sample**

In the study entitled "The Effect of Learning English Vocabulary by Using 'Word Search' Games at SMAN 5 Sorong Regency (A Quasi-Experimental Study at Tenth Grade Students)". The research population includes 2 classes of class X students at SMAN 5 Sorong Regency. The researcher chose two classes because they are considered to be at a developmental stage that requires better vocabulary.

According to Gay (1992), the population is the overall group that is the target of the research and where the results of the research are generalized. While the sample is a part of the population that is selected to be studied with the aim of representing the characteristics of the population. The sample must be representative and adequate in size for the research results to be valid. Due to time, cost, and effort limitations, researchers used appropriate sampling techniques, such as random, purposive, or stratified sampling.

The research sample uses purposive sampling, which depends on the availability of classes and school conditions. The sample consisted of two groups, namely 1) Experimental group: Classes that received treatment in the form of vocabulary learning using word search games; 2) Control group: The vocabulary learning class uses conventional methods without using games. Each group has 27 students per group, with 54 students from both classes, to ensure representative results and support statistical analysis. Subject of research

## **Technique of data collection**

In the research "The effect of English vocabulary learning with the game 'Word Search' in SMAN 5 Sorong Regency (Quasi-experimental study on grade 10 students)", data collection techniques have been applied through several complementary methods.

The researcher uses data collection techniques by using tests as the main instrument. The test was used to measure the mastery of high school English vocabulary before and after being given learning treatment using word search application game media. This technique is relevant technique because this study aims to find out whether there is an increase in students' vocabulary skills through the use of the application game.

Data collection is carried out in three stages, namely: a) Pre-tests will be carried out before the treatment is carried out. The purpose of pretest is to find out the initial ability of students' vocabulary mastery before being given learning using the word search application; b) Treatment is a stage of giving special treatment to experimental classes, namely learning English vocabulary using the Word Search Application. Treatment was carried out in four meetings with different topics in each meeting, namely: daily activity vocabulary, sport vocabulary, food and drink, school object; c) Post-tests are given after all treatment sessions are completed. The goal is to find out the extent to which students' vocabulary mastery is improved after learning using the Word Search Application.



## Instrument of Research

Validity is the level of accuracy and suitability of an instrument or measurement method in measuring what should be measured. In other words, an instrument is said to be valid if the results obtained reflect the variables to be studied, (Mariel et al, 2020). To ensure the validity of the instrument, several stages are carried out, namely, with Content Validity and Construct Validity. Meanwhile, reliability is the extent to which a measurement method produces consistent and stable results when the measurement is repeated under the same conditions (Bakker et al., 2020). In this study, the reliability of the vocabulary test was calculated using the Cronbach's Alpha method. An instrument is said to be reliable if the value of Cronbach's Alpha  $> 0.70$ ; if the reliability value is  $< 0.70$ , then revision is made by removing or correcting the question item that lowers the reliability value to reach the minimum expected limit.

## Technique of Data Analysis

The study "The Effect of Learning English Vocabulary by Using 'Word Search' Games at SMAN 5 Sorong Regency (A Quasi-Experimental Study at Tenth Grade Students)" used data analysis to evaluate the extent to which Word Search games can affect students' vocabulary mastery. The analysis used in this study is:

### a. Description Analysis

The data collected consisted of pre-test and post-test results of vocabulary from students from the experimental and control classes. These data indicate initial and post test-treatment abilities.

### b. Normality Test

Before conducting statistical tests, a normality test was carried out on pre-test and post test of both classes using the Kolmogorov-Smirnov or Shapiro-Wilk test.

$$W = ( \sum (a_i * x_{(i)})^2 ) / ( \sum (x_{(i)} - \bar{x})^2 )$$

Information:

- W = Nilai statistics Shapiro-Wilk
- $x_{(i)}$  = sequence data from the sample
- $\bar{x}$  = red
- $a_i$  = constant
- n = number of samples

### c. Homogeneity Test

The researcher will conduct a homogeneity test using the Leven's Test to find out whether the variance of the two groups is homogeneous.

Formula:



$$W = ((N-k) / (k-1)) * ( \sum N_i (Z_{i.} - Z_{..})^2 ) / ( S S (Z_{ij} - Z_{i.})^2 )$$

Information:

- N = total number of samples
- k = number of groups
- N<sub>i</sub> = number of samples per group
- Z<sub>ij</sub> = score in a group
- Z<sub>i.</sub> = average of each group
- Z<sub>..</sub> = overall average

d. Hypothesis Test

The researcher will test the influence of the use of games on vocabulary mastery, an Independent Sample t-test will be carried out.

Formula:

$$t = (X1 - X2) / \sqrt{((S1^2/n1) + (S2^2/n2))}$$

Information:

- X1 = average experimental class score
- X2 = average control class score
- S1<sup>2</sup> = experimental class variance
- S2<sup>2</sup> = control class variance
- n1 = number of samples of experimental class
- n2 = number of samples of the control class

## FINDINGS AND DISCUSSION

This research was carried out at SMA N 5 Sorong Regency in the odd semester of the 2024/2025 academic year. The population in this study is all students of class X who are spread across a group of students. Based on data from the school. The total number of students in class X is 320 students, consisting of 139 male students and 181 female students. This data gives an idea that the comparison between men and women is relatively balanced, although female students are slightly more dominant in numbers.

The researcher took a sample of 54 students from the total population to be used as research respondents. Purposive sampling techniques, which are based on certain considerations related to the purpose of the study, are used for sampling. The experimental and control groups formed two sample groups, namely class X B and X C.

**Table 1 Number of Students by Gender**

Gender	Total students
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1	Male	139 students
2	Female	181 studentss
Total		320 sudentss

**Table 2 Number of Respondents by Gender**

Gender		Total students
1	Male	29 students
2	Female	25 students
Total		54 sudentss

**Table 3 Normality Test**

Class	Test	Sig.	Descriptif
Experimental	Post-Test	0.124	Normal
Control	Post-Test	0.229	Normal
Experimental	Pre-Test	0.499	Normal
Control	Pre-Test	0.404	Normal

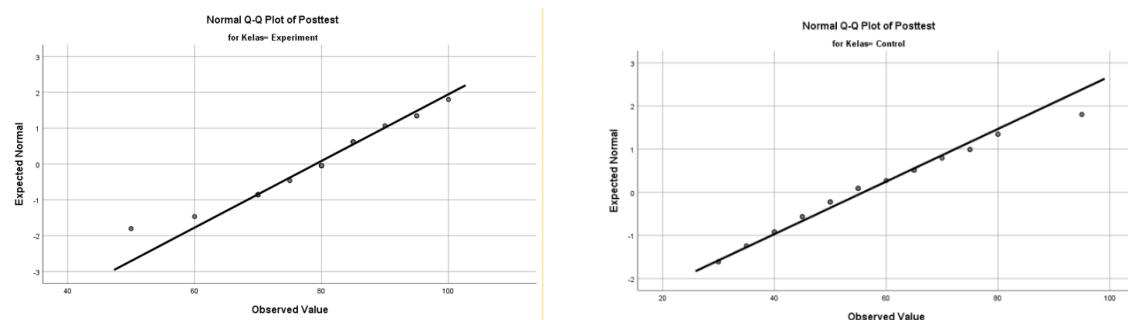
The normality test in this study was conducted using the Shapiro–Wilk test because the number of respondents in both the experimental and control classes was less than 100 students. The purpose of this test is to determine whether the data are normally distributed, which is one of the requirements for applying parametric statistical tests such as the independent sample t-test.

Based on the results of the analysis, the post-test scores of the experimental class obtained a significance value of 0.124, while the control class obtained 0.229. For the pre-test scores, the experimental class obtained a significance value of 0.499, and the control class obtained 0.404. Since all significance values are greater than the alpha level of 0.05, it can be concluded that both the pre-test and post-test data from the experimental and control classes are normally distributed.

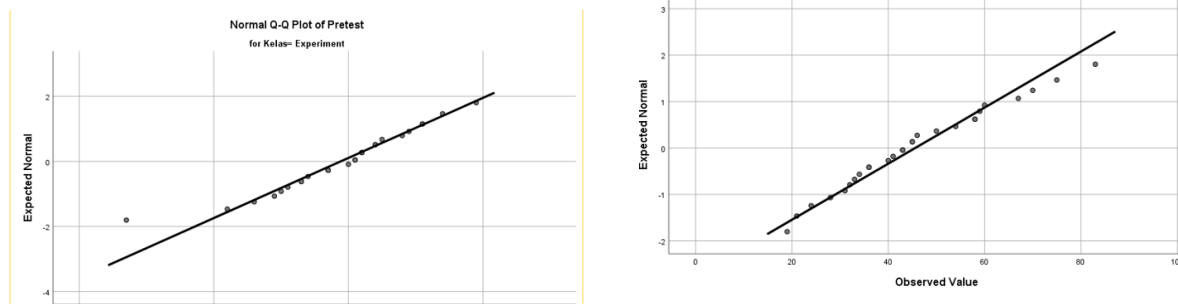
These findings indicate that the assumption of normality has been fulfilled. Therefore, further statistical analysis can be carried out using parametric tests, namely the independent sample t-test, to examine whether there is a significant difference in vocabulary achievement between students taught through the Word Search game and those taught through conventional methods.



**Table 4 Normal Q-Q Plot of Posttest for Control & Experiment**



**Table 5 Normal Q-Q Plot of Pre-Test for Control & Experiment**



### Reliability Test

The result of the reliability analysis showed that the Cronbach's Alpha coefficient was 0.835. An instrument is categorized as reliable if the reliability coefficient is greater than 0.70. Since the obtained coefficient in this study is higher than 0.70, it can be concluded that the vocabulary test instrument is highly reliable (Sugiyono, 2021).

**Table 6 Result of Reliability Test**

INSTRUMENT	Cronbach's Alpha	Criteria
Pre-Test	0.718	Reliabel
Post-Test	0.746	Reliabel
Overall	0.835	Highly Reliabel

This finding means that the test items used to measure students' vocabulary mastery are consistent and dependable for data collection. Therefore, the instrument is appropriate to be used for both the pre-test and post-test in the experimental and control groups.



### Homogeneity Test

Based on the results of the homogeneity test using Levene's Test, the significance values obtained were 0.062 for the post-test and 0.067 for the pre-test. Since both values are greater than 0.05, it indicates that the variance of the scores in both groups is homogeneous. This means that the distribution of scores between the experimental and control groups is similar, and therefore the comparison of the two groups can be conducted validly using an independent sample t-test.

**Table 7 Result of Homogeneity Test**

Data	df	Sig.	Description
Post-Test	52	0.062	Homogeneous
Pre-Test	52	0.067	Homogeneous

### Result Of Independent Sample t-test

Based on the independent sample t-test, the results for the post-test show a value of  $t = -6.095$ , with degrees of freedom ( $df = 52$ ), and a significance value (Sig. 2-tailed) = 0.000. Since the significance value is lower than the alpha level of 0.05 ( $0.000 < 0.05$ ), it can be concluded that there is a statistically significant difference in the post-test scores between the experimental and control groups.

**Table 8 Independent Sample t-test**

Data	T	df	Sig.(2-tailed)	Description
Post-Test	-6.095	52	0.000	significant
Pre-Test	-3.308	52	0.002	significant

Meanwhile, the results of the pre-test show a value of  $t = -3.308$ , with  $df = 52$ , and a significance value of 0.002. This also indicates a significant difference between the two groups at the beginning of the study, although the main focus remains on the post-test outcomes after the treatment.

These findings imply that the use of the Word Search Game as a learning strategy had a meaningful impact on students' vocabulary mastery. Students in the experimental group, who were taught using the game-based learning method, achieved higher scores in the post-test compared to those in the control group, who were taught through conventional methods.

In other words, the null hypothesis ( $H_0$ ), which states that there is no difference in vocabulary achievement between the two groups, is rejected. Conversely, the alternative hypothesis ( $H_1$ ), which proposes that the experimental group outperforms the control group, is accepted.



## **Comparison Between Experimental and Control Classes**

Based on the post-test results, a clear difference can be observed between the experimental and control classes. The students in the experimental class, who learned English vocabulary using the Word Search game, achieved higher scores overall compared to the control class, which received conventional instruction.

The average score of the experimental class was 79.07, while the control class had a mean score of 55.96. This indicates a mean difference of 23.11 points in favor of the experimental class. Furthermore, the experimental class demonstrated a higher level of consistency in scores, with the majority of students scoring above 70, whereas the control class had more varied results, with scores ranging from 30 to 95.

The highest score in the experimental class was 100, while in the control class it was 95. The lowest score in the experimental class was 50, compared to 30 in the control class. This shows that even the lowest-performing students in the experimental class achieved a higher score than some students in the control group.

These results suggest that the Word Search game had a significant positive impact on students' vocabulary mastery. The game appears to enhance students' engagement, motivation, and interaction with vocabulary items, leading to better learning outcomes. In contrast, students in the control class, who received conventional instruction, did not show the same level of improvement, indicating that traditional methods may be less effective in promoting active vocabulary acquisition.

In conclusion, the comparison of post-test scores clearly demonstrates that the experimental class outperformed the control class. This provides strong evidence that game-based learning, such as the Word Search game, can significantly improve students' English vocabulary achievement.

## **Discussion**

Based on the results of this study, the use of Word Search games as a learning medium showed a significant positive influence on students' English vocabulary mastery. This can be seen from the post-test score, where the average score of the experimental class reached 79.07, while the control class was only 55.96, with an average difference of 23.11 points. These findings indicate that game-based learning can improve vocabulary mastery more effectively than conventional methods.

The results of this study are in line with the findings of previous research. Zou, Huang, and Xie (2020) through a literature review on vocabulary learning based on digital games found that digital games can significantly improve vocabulary mastery by creating an interactive and engaging learning environment, which supports the repetition and use of vocabulary in context. These findings are also in line with the research of Hashemi (2021), who used a quasi-experimental design to show that the use of educational games can improve vocabulary mastery and reading comprehension in gifted students, as games can increase motivation to learn as well as reduce boredom.



In addition, Flores Quiroz et al. (2021) examined the effectiveness of the Kahoot! as a vocabulary learning medium at the high school level. The results of their study showed that the experimental group that used Kahoot! experienced a statistically significant improvement in vocabulary mastery compared to the control group, with  $t\text{-count} = 3.31 > t\text{-table} = 1.677$  and  $p < 0.05$ . This is in line with this research, which shows that interactive and competitive learning formats through games can increase student engagement and facilitate better vocabulary mastery.

In addition, Fitriani, Susanto, and Efrizal (2025) found that the use of the Bamboozle digital game in grade VIII students significantly improved vocabulary mastery compared to conventional learning methods. Similarly, Rusmiati, Miftahul Jannah, and Wahyuningsih (2025) reported that crossword puzzle activities as a vocabulary learning medium significantly improved vocabulary mastery, with statistical analysis showing  $t\text{-count} = 2.13 > t\text{-table} = 1.99$  at a significance level of 0.05.

Overall, the findings from this study and previous research show that game-based learning is able to promote students' active engagement, vocabulary repetition, and context understanding more effectively. The interactive nature of the game encourages students to focus, collaborate, and practice vocabulary repeatedly, resulting in higher learning outcomes than conventional methods.

This study corroborates empirical evidence that the integration of game-based learning strategies, especially Word Search, in learning English vocabulary can significantly improve students' vocabulary mastery. These findings are in line with previous research that emphasizes that game-based strategies have great potential to improve student motivation, engagement, and learning outcomes in language mastery.

Thus, it can be concluded that the use of Word Search games is effective in improving students' vocabulary mastery at SMAN 5 Sorong Regency. The game not only improves test scores, but also builds learning motivation, active engagement, and contextual vocabulary repetition, which are important factors in better vocabulary mastery.

## CONCLUSION

Based on the results of the research entitled "The Effect of Learning English Vocabulary by Using Word Search Game at SMAN 5 Sorong Regency", the following conclusions can be drawn:

### 1. The Effectiveness of Word Search Game in Vocabulary Mastery

The use of the Word Search game significantly improves students' vocabulary mastery. This is evidenced by the post-test results, where the experimental class, which used the Word Search game, achieved a mean score of 79.07, while the control class, which received conventional instruction, only reached 55.96. The mean difference of 23.11 points indicates that game-based learning can enhance vocabulary acquisition more effectively than traditional methods.



## 2. Significant Difference Between Experimental and Control Classes

The independent sample t-test analysis indicated that there was a significant difference between the experimental and control classes in both the pre-test and post-test results. For the pre-test, the value obtained was  $t = -3.308$  with  $df = 52$  and  $p = 0.002 (< 0.05)$ , showing that the two groups had different vocabulary mastery levels before the treatment.

More importantly, for the post-test, the result was  $t = -6.095$  with  $df = 52$  and  $p = 0.000 (< 0.05)$ . This very low significance value indicates a highly significant difference between the two groups after the treatment. The experimental group, which was taught using the Word Search game, achieved considerably higher post-test scores than the control group taught through conventional methods.

These results confirm that the implementation of the Word Search game had a statistically significant positive effect on improving students' English vocabulary mastery. The game-based approach not only engaged students actively but also supported better retention and application of vocabulary compared to traditional teaching techniques.

## 3. Contribution to Learning Process

The Word Search game provides an interactive, engaging, and motivating learning environment that encourages active participation, repetition, and contextual use of vocabulary. These factors contribute to better retention and understanding of vocabulary, supporting the constructivist learning principles.

In conclusion, the Word Search game is an effective instructional medium for teaching English vocabulary to high school students, and its implementation leads to a significant improvement in students' vocabulary mastery compared to conventional learning methods.

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