

EFFECTIVENESS OF HIDDEN WORD GAME TO IMPROVE NINTH GRADERS' VOCABULARY MASTERY

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Abstract

This research aims to examine the effectiveness of using the hidden word game in improving the English vocabulary mastery of ninth-grade students at Susila Koting junior high school. The background of this research is the low vocabulary mastery among students, influenced by a lack of variation and interactivity in teaching approaches. The use of engaging learning media, such as games, is expected to increase students' learning motivation and enhance their language skills. This research employs a quantitative method with a quasi-experimental design, where class IXA serves as the control group (without the hidden word treatment) and class IXB as the experimental group (with the hidden word treatment), each consisting of 20 students. Data collection was carried out through tests (pre-test and post-test), and the data were analyzed using inferential statistical tests with the help of SPSS software version 30. The results of the research show that the test instruments used are valid and reliable. The pre-test and post-test data from the experimental class demonstrate a significant improvement in vocabulary mastery. The normality and homogeneity tests indicate that the data are normally distributed and homogeneous. The results of the paired sample t-test and independent sample t-test reveal a significant difference between the experimental and control groups. The effectiveness test using Cohen's d produced a very large value, indicating that the use of the hidden word game has a very strong influence on improving students' vocabulary mastery.

Key words: Hidden Word Game, Vocabulary Mastery

INTRODUCTION

Each country has its own language; however, English is one of the most commonly used languages in business communication. This is because English is the primary international language used for communication in various aspects of life, including education, economy, politics, and culture on a global scale. As a universal language, English is widely used in the fields of technology, education, politics, business, and many others (Siregar, 2023). According by the EF English Proficiency Index (EF EPI), the English language proficiency of human resources (HR) in Indonesia ranks 74 out of 100 countries, which is far behind other Southeast Asian (Wilson & Sutrisno, 2022). This should be a concern for the Indonesian government, especially for Indonesian students in general, to enhance their English proficiency. One way the Indonesian government has implemented is to make English as one of the compulsory subjects in the middle education level as stated in the Minister of Education, Culture, Research, and Technology Regulation Number 7 of 2022 concerning content standards for early childhood education, primary education, and middle education levels.

English learning involves four key skills that must be thoroughly mastered: speaking, reading, writing, and listening. The important of English vocabulary for a person to master vocabulary to be able to understand and use the vocabulary that he possesses to express thoughts and feelings in various aspects of life, such as language activities. According to (Deviyanti et al., 2022) Vocabulary is a wealth of words that belongs to speakers as well as authors and is also the part of the language that contains all the information about the use and meaning of words. Proficiency in mastering vocabulary in

English subjects plays a crucial role in understanding every material to be taught. Vocabulary mastery involves the ability to understand words through reading and listening, and to use them effectively in writing and speaking (Haryadi, 2022). The more students master vocabularies, the easier it is to learn English in the classroom (Saridevita et al., 2022).

Vocabulary mastery is very important in supporting students success in learning English. Nevertheless, based on three months of observation, the researcher found that the vocabulary mastery level of students at Susila Koting junior high school is still very low. Several factors were identified as the causes of this problem, including: (1) lack of student enthusiasm in monotonous English learning (providing material only by explaining definitions and examples), (2) lack of use of technology possessed by the teacher so that the student feels full and boring, (3) lack of the use of interesting methods in the English learning process. From the above problem, teachers are required to apply teaching methods that are easy and enjoyable. One of the methods used is games. Games have a positive role in the learning process (Kusumaningrum, 2021). Games are a means of creating a more active, enjoyable learning atmosphere in the classroom and can also enhance students' interest in learning (I Gusti Ayu Mahatma Agung, 2023). One of the game that will be used is the hidden word game.

Hidden word game is a game aimed at developing and enhancing vocabulary mastery, and students will be more actively engaged in following the learning process (Garwan & Jusnita, 2020). The game involving word search in a set of randomly arranged letters on a grid, usually square-shaped. The player's task is to find all the words hidden within the grid. Horizontally, vertically, and diagonally, players can find hidden words. To complete this game, players typically employ the following strategy: searching for the first letter of the word being sought in the set of letters, then looking for the second letter located to the right, left, above, below, or diagonally adjacent, and so on until the found letters form the sought-after word.

Literature review

Vocabulary Mastery

Vocabulary is the smallest component of language and can be defined as a set of alphabets arranged in a dictionary consisting of a single word with meaning, more than one word, or a collection of words (phrases) that have meaning (Kumar & Murthy, 2020). According to (Evy Tri Widyahening & Sri Rahayu, 2021) vocabulary is a collection of words that one must possess and is also one of the important components of the language system to be learned in English. Therefore, it can be said that vocabulary is the foundation or main basis in learning a foreign language, with English as the first foreign language that students must learn and master at various educational levels. If someone possesses both active-productive and passive-receptive mastery skills, they can be said to have a command of vocabulary. Active-productive mastery includes the ability to speak and write, also known as encoding, which is the process of communicating ideas, thoughts, and feelings through spoken and written language. Passive-receptive vocabulary mastery, encompassing listening and reading (decoding), refers to internal comprehension processes indicated by the ability to identify objects, select words based on meaning, and recognize synonyms and antonyms (Sultan et al., 2024). According to (Kyle, 2020), effective vocabulary acquisition requires not only rote memorization but also repeated and meaningful exposure to words in various contexts. Moreover, (Thi et al., 2024) emphasizes that learners must engage both receptively and

productively with vocabulary to achieve deeper lexical competence. This means vocabulary instruction should balance recognition (receptive) with use (productive), which aligns with the aforementioned concepts of encoding and decoding.

Hidden word Game

Mobigame Inc. has developed the hidden word game, which is a type of electronic game that students can play after downloading this game application. In addition to improving vocabulary and other word forms, this hidden word game can also train students to think critically in finding solutions to every problem (Fitria, 2023). According to (Lin & Guo, 2021) the hidden word game is a game that helps strengthen word memory and improve vocabulary skills in language mastery. This game is not only enjoyable but also easy to play. In the hidden word game, students must try to find words on the board consisting of several letters. Students can also guess words which will make the game more challenging. This game is not only fun to play but also very simple, easy, and enjoyable. Students can search for words by sliding letters in various ways, such as vertically, horizontally, diagonally, and even backward. The hidden word game features over 400 vocabulary words to be found. It has appealing graphics and various levels of difficulty, from the easiest to the most challenging. Research by (Nu'man, 2023) also supports that mobile game-based language learning applications are highly effective for vocabulary retention, particularly when combined with elements of repetition, problem-solving, and autonomy.

METHOD

Research Design

This research technique used quasi-experimental quantitative research, in which experiments force the placement of research subjects into class of experiments and controls. Quantitative research is a research method that focuses on measuring and quantifying data. It aims to collect, analyze, and interpret numerical data in order to test predetermined hypotheses. Quantitative research typically answers questions such as “how long,” “how many,” or “to what extent,” and seeks to generalize findings from a sample to a broader population (Ghanad, 2023). In this research, the researcher used total sampling. Total Sampling is information or data collection technique that involves recording or investigating all components that are the subject of the research (Ilahude et al., 2021). This approach was chosen because the total population consisted of only 40 ninth-grade students, making it both feasible and appropriate to include the entire population in the research. The use of total sampling ensures that the data collected reflects the full range of participant characteristics and minimizes the risk of sampling error. In this research, the population and research subjects were identical all ninth-grade students, totaling 40 individuals. Research samples selected classes IXA serves as the control class with no treatment of hidden word game and classes IXB serves as experimental class with a given treatment of hidden word game. The independent variable is hidden word game, while the one becoming dependent is vocabulary mastery. So, the researcher wanted to see the difference between the experimental class and the control class, with the aim of seeing the effectiveness of applying hidden word game to improve vocabulary mastery in English class. The sample in this research is 40, with class IXA which is a control class with 20 students and class IXB which is an experimental class of 20 students.

Data Collection Technique

The researcher collected the data for this research by performing several tests. This research uses an experimental design, the data collection technique employed is pre-test and post-test. Pre-test and post-test are used to measure the effectiveness of the treatment provided. In other words, pre-test and post-test are essential tools to ensure that experimental research can measure the impact of the treatment in a valid and reliable manner. Pre-test and post-test are used to measure the changes or impacts that occur in respondents after being given a specific treatment or intervention (Arib et al., 2024). According to (Esmiati et al., 2020) Pre-test and post-test in research are used to measure changes, evaluate, or assess the effectiveness of an intervention. In experimental design, the pre-test provides an overview of the initial condition of the subjects before the treatment, while the post-test is used to determine the condition or changes after the treatment is applied.

The Technique of Data Analysis

The data analysis used in this research is inferential statistics. Inferential statistics is a branch of statistics used to draw conclusions or make predictions about a population based on sample data (Wicaksana et al., 2020). The analytical techniques used are inferential statistics analysis techniques to see the effectiveness of hidden word game to improving the mastery of English vocabulary for ninth grade students in Susila Koting junior high school. In this research, data processing uses SPSS Statistics software to statistics analyse . Here are the steps: validity test, reliability test, normality test, homogeneity test, paired sample t-test, independent sample t-test, effectiveness test using Cohen's d. At this stage, the researcher hypothesized whether or not the hidden word game is effective in improving English vocabulary mastery in experimental class and control class. Here are:

HO: The application of hidden word game isn't effective in improving student's vocabulary mastery.

HI: The application of hidden word game is effective in improving student's vocabulary mastery.

FINDINGS AND DISCUSSION

Finding

This research was conducted at Susila Koting junior high school, located in Koting B village, Koting District, Sikka Regency, East Nusa Tenggara Province. The reason the researcher chose this location is that Susila Koting junior high school was the place where the researcher participated in sixth batch of the Campus Teaching Program, and during the pre-research stage, the researcher identified an issue regarding the English vocabulary mastery of students at Susila Koting junior high school, particularly among ninth-grade students, which was still considered low. The research finding were obtained from tests conducted before (pre-test) and after (post-test) the use of the hidden word game. Several tests that need to be conducted in this research include:

1. Validity test

The validity of the multiple-choice test instrument was assessed using Pearson Product Moment Correlation analysis, based on data obtained from a try-out involving 40 students. The purpose of this test was to evaluate whether each item in the instrument effectively measured what it was intended to assess. The validity of each item was determined by examining two key indicators: the correlation coefficient

(Pearson Correlation) and the significance value (Sig. 2-tailed). According to the established criteria, an item is considered valid if it has a correlation coefficient (r-value) of at least 0.05 and a significance level less than 0.001 ($p < 0.001$). The results showed that all 30 items had correlation coefficients ranging from .506 to .849 and significance values below 0.001. This indicates that every item met the required threshold for validity. Therefore, it can be concluded that all test items in the instrument are valid and suitable to be used as a measurement tool in this research.

2. *Reliability Test*

In addition to validity, the research instrument was also tested for reliability to determine the internal consistency of the items in measuring the same variable. The reliability test was conducted using the Cronbach's Alpha formula, which is one of the most commonly used methods for measuring the reliability of instruments in the form of scales or tests. The results of the analysis showed that the Cronbach's Alpha value obtained was 0.749, with a total of 30 items. According to reliability assessment criteria, an Alpha value in the range of $0.7 \leq \alpha < 0.8$ indicates good reliability. This means that the instrument is capable of producing consistent results when used to measure the research variable. Therefore, it can be concluded that the instrument used in this research is not only valid but also reliable, making it suitable to be used as a measurement tool for collecting accurate and trustworthy data.

3. *Normality Test*

Table 1. Case processing summary

| Class | Valid N | Valid Percent | Missing N | Missing Percent | Total N | Total Percent |
|------------------------|---------|---------------|-----------|-----------------|---------|---------------|
| Pre-test Control | 20 | 100.0% | 0 | 0.0% | 20 | 100.0% |
| Post-test Control | 20 | 100.0% | 0 | 0.0% | 20 | 100.0% |
| Pre-test Experimental | 20 | 100.0% | 0 | 0.0% | 20 | 100.0% |
| Post-test Experimental | 20 | 100.0% | 0 | 0.0% | 20 | 100.0% |

Table 2. Tests of normality

| Class | Statistic | df | Sig. |
|------------------------|-----------|----|-------|
| Pre-test Control | 0.917 | 20 | 0.085 |
| Post-test Control | 0.921 | 20 | 0.088 |
| Pre-test Experimental | 0.911 | 20 | 0.084 |
| Post-test Experimental | 0.917 | 20 | 0.102 |

Based on the case processing summary table, all classes (pre-test control, post-test control, pre-test experimental, and post-test experimental) have a total of 20 valid cases (100%) with no missing data. This indicates that there are no missing values that need to be addressed. Meanwhile, the normality test results using Shapiro-Wilk show that the significance (Sig.) values for all classes are greater than 0.05, as follows: pre-test control: 0.085, post-test control: 0.088, pre-test experimental: 0.084, post-test experimental: 0.102. Since all Sig. values are greater than 0.05, it can be concluded that the data in each class follow a normal distribution.

4. Homogeneity Test

Table 3. Test of homogeneity of variance

| | Levene Statistic | df1 | df2 | Sig. |
|---|------------------|-----|--------|------|
| Based on Mean | 1.798 | 3 | 76 | .155 |
| Based on Median | 1.253 | 3 | 76 | .296 |
| Based on Median and with adjusted df | 1.253 | 3 | 73.746 | .297 |
| Based on trimmed mean | 1.796 | 3 | 76 | .155 |

Based on the results of the homogeneity of variance test displayed in the table above, the Levene Statistic values obtained from various methods (mean, median, median with adjusted degrees of freedom, and trimmed mean) range from 1.253 to 1.798. The Significance (Sig.) column shows the p-value of this test. The p-values for all methods are above 0.05 (e.g., 0.155, 0.296, and 0.297). Therefore, since the p-value is greater than 0.05, the hypothesis (H_0) is accepted. This means that the variances among the class are homogeneous, or in other words, there is no significant difference in variances between the classes. Thus, the assumption of homogeneity of variance is met.

5. Paired Sample t-Test

Table 4. Paired samples test experimental class

| | Mean | Std. Deviation | Std. Error Mean | Lower | Upper | t | df | One-Sided p | Two- Sided p |
|---|---------|-------------------|-----------------------|---------|---------|---------|----|----------------|-----------------|
| Pre-test & Post-test Experimental | -41.900 | 12.303 | 2.751 | -47.658 | -36.142 | -15.231 | 19 | <.001 | <.001 |

Note: 95% Confidence interval of the difference, significance (one sided p and two sided p)

Based on the results of the paired samples test the mean difference between the pre-test and post-test in the experimental class is -41.900. This indicates that after the intervention, the score changed by an average of 41.900, the standard deviation value of 12.303 represents the extent of variation in the difference between pre-test and post-test scores within the experimental class, the 95% confidence interval of the difference, with a lower bound of -47.658 and an upper bound of -36.142, means that in 95% of cases, the true mean difference

between pre-test and post-test scores is expected to fall within this range, the t-value of -15.231 is the test statistic from the paired t-test, indicating how large the observed difference is compared to the variation in the data, the degree of freedom (df) value of 19 represents the sample size minus one (n-1), meaning that the research included 20 participants. Significance (p-value) one-sided p (<0.001) and two-sided p (<0.001): since the p-value is less than 0.05 the difference between pre-test and post-test scores is statistically significant. Thus, the results of this paired t-test indicate a highly significant difference between pre-test and post-test scores in the experimental class ($p < 0.001$).

Table 5. Paired samples test control class

| | Mean | Std. Deviation | Std. Error Mean | Lower | Upper | t | df | One-Sided p | Two-Sided p |
|-------------------|------|----------------|-----------------|-------|-------|------|----|-------------|-------------|
| Pre-test Control | .050 | 1.504 | .336 | -.654 | .754 | .149 | 19 | .442 | .883 |
| Post-test Control | | | | | | | | | |

Note: 95% Confidence interval of the difference, significance (one sided p and two sided p)

Based on the results of the paired samples test, the mean difference between pre-test control and post-test control is 0.050. This indicates that there is a small change in scores between the pre-test and post-test in the control group, the value 0.336 represents the standard error of the mean difference, which is used to measure the accuracy of the population mean estimate based on the given sample. Significance one-sided p-value = 0.442, two-sided p-value = 0.883, the two-sided p-value of 0.883 is much greater than 0.05, leading us to fail to reject the zero hypothesis (H_0). This means that there is no statistically significant difference between pre-test and post-test scores in the control group. Based on the results of the paired samples test, no significant difference was found between pre-test control and post-test control, with a p-value of 0.883.

6. Independent Sample t-Test

Table 6. Class Statistics

| Class | N | Mean | Std. Deviation | Std. Error Mean |
|------------------------|----|-------|----------------|-----------------|
| Post-test Control | 20 | 37.10 | 9.781 | 2.187 |
| Post-test Experimental | 20 | 79.20 | 7.038 | 1.574 |

Table 7. Independent Samples Test class control and experimental

| Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|------|------------------------------|----|--------------|-----------------|-----------------------|---|--|
| F | Sig. | t | df | Significance | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |

| | | | | One-Sided p | Two-Sided p | | | Lower | Upper | |
|-----------------------------|-------|------|---------|-------------|-------------|-------|---------|-------|---------|---------|
| Equal variances assumed | 3.535 | .068 | -15.624 | 38 | <.001 | <.001 | -42.100 | 2.695 | -47.555 | -36.645 |
| Equal variances not assumed | | | -15.624 | 34.516 | <.001 | <.001 | -42.100 | 2.695 | -47.573 | -36.627 |

Based on the table above, the results of Levene's test for equality of variances show an F-value of 3.535 with a Sig. = 0.068 (greater than 0.05). This indicates that there is to accepted the zero hypothesis, meaning that the variances of the two classes are equal (equal variances assumed). Since the significance value is greater than 0.05, T-test for equality of means the t-value = -15.624 with df = 38 represents the result of the t-test with 38 degrees of freedom, the p-value (two-tailed) < 0.001, which is smaller than 0.05, this indicates that there is a statistically significant difference between the control class and the experimental class, mean Difference = -42.100, meaning that the average score of the control class is 42.1 points lower than that of the experimental class, 95% confidence interval (CI) for the difference, the 95% confidence interval (-47.555, -36.645) indicates that the mean difference between the control class and the experimental class falls within this range. The t-test results show that there is a statistically significant difference between the control class and the experimental class ($p < 0.001$). The mean difference between the two classes is -42.100, with a 95% confidence interval ranging from -47.555 to -36.645, this means that the average score of the control class is consistently lower than that of the experimental class.

7. Effectiveness test using Cohen's d

Table 8. Effect Size Cohen's d

| | | Standardizer ^a | Point Estimate | 95% Confidence Interval | |
|--|-----------|---------------------------|----------------|-------------------------|--------|
| | | | | Lower | Upper |
| Post-test control and Post-test experimental | Cohen's d | 8.521 | -4.941 | -6.200 | -3.664 |

Note: The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation (Standardizer a)

Based on the table above, the Cohen's d value of 0.852 indicates a very large effect in the difference in post-test results between the control and experimental class. This value suggests that the mean difference between the two classes is highly significant when compared to the pooled standard deviation. The 95% confidence interval for Cohen's d ranges from -6.200 to -3.664, meaning that this difference is quite stable and not due to chance. Overall, these results

suggest that the treatment applied to the experimental class had a significant impact on post-test results compared to the control class.

Discussion

The implementation of the hidden word game as a teaching strategy to improve the English vocabulary mastery of ninth-grade students at Susila Koting Junior High School has proven to be highly effective. This is evidenced by a significant increase in the post-test scores of students in the experimental class, a large effect size (Cohen's $d = 0.852$), and observable improvements in student engagement, motivation, and participation throughout the learning process. These results are in line with several prior studies that emphasize the benefits of game-based learning in vocabulary acquisition. For example, (Maulana, 2020) reported that educational games like Word Wall improved students' vocabulary mastery significantly, with average scores rising from 73.17 to 83.50 and the percentage of mastery increasing from 70% to 93.3%. Similarly, (Fitria, 2023) demonstrated that word search puzzles are effective tools for strengthening vocabulary retention, as they engage students in an active and enjoyable way, making learning more meaningful. Furthermore, (Lin & Guo, 2021) found that EFL learners who played online word-based games showed substantial improvements in vocabulary memorization and cognitive processing. These findings suggest that games like the hidden word game not only enhance lower-order thinking skills such as recalling but also stimulate higher-order thinking skills such as analyzing and synthesizing information—especially when students are required to identify letter patterns within a grid of letters. The current study also supports the work of (Deviyanti et al., 2022), who showed that vocabulary games can be inclusive and effective even for students with special needs. This reinforces the idea that game-based learning fosters accessibility, independence, and confidence in students, encouraging even typically passive learners to participate more actively. The interactive nature of the hidden word game also supports collaborative learning, as students often solve the puzzles in pairs or small groups, promoting teamwork and communication in English.

In addition, the effectiveness of this game aligns with the principles of student-centered learning as outlined in Indonesia's Merdeka Curriculum, which encourages the use of creative, varied, and engaging teaching methods. According to (Wilson & Sutrisno, 2022), even digital applications like CAKE have demonstrated positive outcomes in vocabulary development—proving that gamified approaches, whether digital or traditional, can produce significant educational benefits. Moreover, (Kusumaningrum, 2021) argues that digital game-based learning, especially those involving problem-solving and pattern recognition, enhances both engagement and critical thinking skills in students. This assertion is reflected in this research, where the hidden word game not only helped students memorize words but also improved their ability to recognize patterns and think strategically. In support of this, (Álvarez Martínez et al., 2025) state that mobile-assisted vocabulary games promote learner autonomy and motivation, leading to higher language achievement. Finally, studies by (Lesley & Dong, 2025) have confirmed that word games integrated with digital platforms increase long-term vocabulary retention compared to traditional teaching. In summary, the findings of this research substantiate the growing body of literature supporting the use of educational games in vocabulary learning. The hidden word game successfully bridges instructional content with engaging activities, making it not just a fun classroom tool but a powerful educational resource. Compared to conventional methods, game-based strategies

offer a more dynamic and impactful learning experience. Therefore, it is strongly recommended that English teachers integrate vocabulary games like the hidden word game into their instructional practices to improve students' vocabulary mastery and learning enthusiasm.

CONCLUSION AND SUGGESTION

Conclusion

Based on the research results, it can be concluded that the hidden word game is highly effective in improving the vocabulary mastery of ninth-grade students at Susila Koting junior high school. Data analysis shows a significant difference between the experimental and control groups, with a very large effect size. All stages of analysis, including instrument validity, reliability, and normality test, and homogeneity of variance test, have been met, ensuring that the research findings are reliable and generalizable. This suggests that the hidden word game is significantly more effective than conventional methods in enhancing students' English vocabulary. Therefore, it can be concluded that the hidden word game is a highly recommended and innovative interactive learning strategy. In addition the research hypothesis H1, which states that the application of hidden word game is effective in improving student's vocabulary mastery is accepted.

Suggestion

Based on research findings indicating that the use of the hidden word game has a very strong effectiveness in improving the English vocabulary of ninth grade students at Susila Koting junior high school, several suggestions can be provided: implementation in learning English teachers are encouraged to integrate the hidden word game as an interactive learning method to enhance student engagement and enrich their vocabulary more effectively compared to conventional methods and also development of game variations to make learning more engaging and less monotonous, it is recommended to develop variations in the use of the hidden word game, such as adjusting the difficulty level of the words to match students' abilities or incorporating digital media to increase interactivity.

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