THE EFFECT OF UNDERCOVER GAME ON STUDENTS' VOCABULARY ACHIEVEMENT

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ABSTRACT
The purpose of this study was to find out if eleventh-grade students at SMA Negeri 10 Pontianak's usage of the Undercover Game app affected their vocabulary success in the 2022–2023 academic year. In this study, a pre-experimental design was used. Thirty-two students studying social science made up the sample. Data from the pre- and post-tests were gathered, and a t-test was used for analysis. Twenty-five multiple-choice questions with four possible answers (a, b, c, and d) comprised the test. The post-test result was 2488, but the pre-test result was 2080. The data shows that the t-test result was 18.21. For thirty-one samples, the t table with 5% degree of freedom (df) is 2.039. The alternative hypothesis (Ha) is accepted based on the data analysis shown above, and the null hypothesis (H0) is rejected because the t-test result is greater than the value indicated in the t-table (18.21>2.039). Furthermore, the effect size is 3.09, falling into the high effect (>0.8) category. In summary, there was a significant impact on students' vocabulary achievement when the Undercover Game programme was implemented. For this reason, Undercover Game comes highly recommended as a useful instrument for improving vocabulary in students.

Keywords: Undercover Game, Vocabulary Achievement, Explanation Text.

1. INTRODUCTION

A large vocabulary was necessary to improve one's fluency and proficiency in speaking, writing, listening, and reading in English. As per Hounhanou (2020), learners who possess a bigger vocabulary are better able to comprehend what they read and hear, as well as express themselves. A broader vocabulary allows for the more varied and clear communication of ideas. Vocabulary aids in students' development and comprehension in addition to being a crucial part of learning English. Teachers need to use a few different tactics, ideas, and procedures to help students expand their vocabulary. Using a game-based approach to media learning is one tactic.

The foundational component of language is vocabulary. According to Musa (2021), vocabulary and grammar together can transmit more information. It implies that mastering the new vocabulary in English is a fantastic method for students to advance their skills. Susilawati & Amirul (2023). Grammar is not to be completely disregarded, but vocabulary plays a more significant part in linguistic expression than grammar. When teaching vocabulary, a variety of lexis components should be taken into account. Susanto's (2021) work was utilised in the compilation of this list: 1) Spelling and pronunciation, 2) Grammar, and 3). Collocation.

Most eleventh-grade students at SMA Negeri 10 Pontianak needed help with English vocabulary. The teacher said that the students needed help understanding when the English teacher invited them to discuss learning materials, and the students tended to be less interested in the learning process. This problem the teacher faces because the teacher only uses books during the teaching and learning process activity, so they cannot provide enough support to attract the students' attention or encourage students to learn more, especially in vocabulary.

In this study, the researcher focused on the impact of students' vocabulary achievement in explanatory texts, especially in terms of nouns. Nouns are one of the fundamental parts of speech and are commonly categorized into several types based on their characteristics and functions within a sentence. In explanation texts serve as the building blocks for conveying information about specific objects, concepts, or entities. They play a crucial role in defining and describing the subject matter in a clear and concise manner.

An explanation text is informative writing that aims to provide a clear and detailed explanation of a particular subject or concept. When used as the context for vocabulary learning, explanation texts can be a tool for helping students expand their vocabulary and improve their understanding of complex topics. Therefore, the eleventh-grade students can produce paragraphs describing natural or social phenomena. Mallett et al. (2019) define an explanation text as writing that aims to clarify or inform readers about a specific topic, concept, process, or phenomenon.

The researcher conducted these problems faced by the eleventh-grade students of Social Sciences SMA Negeri 10 Pontianak to provide a solution using a technology-based media approach. To determine the significance and the effect of using Undercover Game on the vocabulary achievement of eleventh-grade Social Sciences students at SMA Negeri 10 Pontianak in the Academic Year 2022/2023. Teachers should also be aware of how and why what students learn impacts them and how future applications of the lesson material help them (Derakhshan & Davoodi Khatir, 2015). Therefore, developing students' intellectual and personal skills requires language education.

The previous study on has ever been conducted by Rosyidi (2022) using Undercover Game for students' vocabulary achievement. This study used a quasi-experimental design, with the population subject being eighth grade students at SMPN 108 Jakarta. The research sample consisted of two classes, namely 8B as the control group and 8A as the experimental group. The results showed that the utilization of Undercover Game in teaching, requesting, or expressing opinions can be considered successful. Based on the success of achievement the criteria were achieved.

Learning cognitive and affective simulation games can result in more efficient teaching of "real-world problems," especially when integrated with other learning methods (Nietfeld, 2019). Games generate fun and motivation for students, which makes them learn new items easily. In the teaching and learning process, educators are strongly encouraged to incorporate digital media as an instructional tool in their teaching and learning, according to Salam et al. (2023). In addition, teaching vocabulary is the first step the teacher should consider. Based on this statement, the researcher used games to teach vocabulary differently. In other words, some learning resources are needed to familiarize students with improving teaching facilities. Teaching English achieves its goals if teaching tools are supported.

The teachers must employ intriguing media to make their classes interactive and less boring Khadijah & Rezeki (2023). The English teachers applied Undercover Game. Undercover is a wordplay game. A small group of people who are to be Impostors has

appeared on the team. Where everyone (including the Impostors) has mysteriously forgotten their identity, the only clues to remember who you are with secret words. The goal is to find the teamwork to oust the impostors from the group. This game has three characters: Civilians, Undercover, and Mr. White. Most of the group are peace-loving Civilians. There are up to two groups of Impostors: Undercover and Mr. White. Ekayanti et al. (2021) found that using the Undercover Game learning media in educational materials lessens psychological tension and anxiety. These results indicate that the use of Undercover Game has a positive effect on students. Related to this, the researcher was inspired to find out whether the Undercover Game also positively affects students' vocabulary achievement in the eleventh grade of social science grade.

The results show the effect of the Undercover Game on students' achievement in mastering vocabulary. In learning vocabulary, the researcher then designed this research using Pre-Experimental Research. For this reason, the researcher recognizes issues that may arise throughout the teaching-learning process. Then, the researcher immediately tries to provide a new solution.

2. METHODS

The researcher examined static data from learners' pre- and post-test scores using a quantitative methodology. Consequently, we examined the potential influence of the Undercover Game app on students' vocabulary achievement. Pre-experimental research using a one-group pre- and post-test design is the methodology used in this study. A pre-test and a post-test, which came following the treatment, were both the subjects of observations. Furthermore, the researcher's position as a teacher in conducting this research. Creswell & Guetterman (2019) provide the following explanation of the research design:

Pre-Test

Data was collected through a pre-test in a classroom on May 11, 2023, to assess students' vocabulary achievement before the treatment. The pre-test consisted of twenty-five questions with a maximum score of 4 for each question, so the total score that can be obtained is 100. In this test, students were asked to choose the correct answer from options A, B, C, or D.

The Treatment

The treatment consisted of two meetings, each lasting 90 minutes. The first treatment was conducted on May 15, 2023, after the students had taken the pre-test. In the treatment, students were prepared to play a game called Undercover Game. The researcher then invited the students to express their opinions about the meaning of the explanatory text after presenting an explanatory video about an earthquake, before asking them to define the vocabulary in the explanatory text. In the second treatment, the researcher instructed the students to read the text entitled "Earthquakes," obtain information from the explanation text and rewrite any vocabulary that they did not understand the translation in Bahasa Indonesia. The researcher then instructed the students to discuss their completed work.

Lastly, the researcher encourages students to summarize the findings of the work they have mentioned on their sheet, allowing them to discuss the findings of their work. The researcher and the students then reflect and conclude. The second meeting was held on May 16th, 2023. First, the researcher displays an explanatory video about an Undercover Game application sourced from YouTube and asks students to open their smartphones and go to the Play Store or App Store to download it on their smartphone first. Second, the researcher asked students how to play the Undercover Game, which was explained in a video, and allowed students to ask questions about the Undercover Game application during the

second meeting. The researcher invites students first to access the Play Store or App Store to download the Undercover Game application on their smartphone after watching an explanation video about an Undercover Game application pulled from YouTube. Second, the researcher provided students with the opportunity to ask questions about the Undercover Game application and asked them about how to play the game, which was presented in a video. Third, the researcher gives the students a room code or an Undercover Game invitation link and instructs them on how to play the game. The researcher then requested students to memorize the words from the game's vocabulary list from the Undercover Game. Afterward, the researcher asked them to discuss the phrases they read for 90 seconds in the chat room. Students are instructed to discuss the definition of the vocabulary memorized in the chat room provided by the application and to share the discussion's outcomes.

Population and Sample/ Participants of the Study

The population of this study were all eleventh-grade students majoring in Social Science at SMA Negeri 10 Pontianak in the 2022/2023 Academic Year, totaling thirty-two students in this study. Researchers used a cluster sampling method, which means the selection of a group of subjects as the object of research (Mackey & Gass, 2021, p. 227). The researcher chose this sample because all samples had the same opportunity, and the population characteristics were similar.

Research Setting

The research was conducted at SMA Negeri 10 Pontianak at Jl. Purnama. Gg. Karya Tani Dalam, Parit Tokaya, Kec. Pontianak Selatan, Kota Pontianak Prov. Kalimantan Barat.

Research Instrument

This study used a standardized instrument in the form of a book entitled "Essential Vocabulary for the TOEFL Exam" with Diane Engelhardt in charge. The purpose of this study was to evaluate the effect of using the Undercover Game on students' vocabulary achievement in explanatory texts. This book was published in McGraw-Hill Education 2015; on the other side, this book is entitled "McGraw-Hill Education essential vocabulary for the TOEFL test" Engelhard (2015) gives a pre-test and post-test for students. To indicate what it should be (in this case, knowledge of the rules of the road) (Mackey & Gass, 2021 p.233). It means that validity relates to the study's success in measuring what the researcher wants to measure. Creswell (2014) identifies four types of validity, namely content validity, appearance validity, construct validity, and criterion-based validity. In this study, the researcher chose to use content validity. The purpose of this study was to evaluate the effect of using the Undercover Game on students' vocabulary achievement in explanatory texts.

Data Collection

In this study, the test is the most significant data collection instrument. Tests are tools to measure students' strengths, weaknesses, difficulties, talents, or potentials, as explained by Cohen et al. (2017). This test was used to assess the impact of using Undercover Game on students' vocabulary achievement in explanatory text.

Data Analysis

Quantitative data is a research method used by researchers to collect data that can be organized, classified, and measured, as described by MacDonald, S., & Headlam (2014). Quantitative data in this study was analyzed using statistical procedures. The results of the analysis showed a significant difference in students' vocabulary achievement in explanatory texts

between the use of Undercover Game and teaching without using Undercover Game.

Calculating the Total Score for Each Student

In the initial stage, to find the sum of individual scores, researchers need to calculate students' individual scores. The following is the formula to calculate the total score of each student.

$$\text{Score of each student} = \frac{\text{Correct answer}}{\text{The number of the questions}} \times 100$$

Calculating Mean Score of Pre-test and Post-test

When all scores had been collected, the students' average scores in both tests were calculated using the following formula taken from Van Blerkom (2017):

For the post-test score:
$$M_2 = \frac{\sum X}{n}$$

While for the pre-test score:
$$M_1 = \frac{\sum X}{n}$$

Calculating Difference Between Pre-test and Post-test Mean Scores

After the calculation of the average score was completed, the researcher identified the difference in scores between the students' pre-test and post-test using the following formula:

$$\text{MD} = M_2 - M_1$$

Calculating t-test

The significance of the difference in scores between students' pre-test and post-test can be seen through the calculation of the t-test using this formula. This formula is taken from Ary et al. (2010, p. 177).

$$t = \frac{MD}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{n}}{n\,(n-1)}}}$$

Hypothesis Testing

To test the hypothesis, the researcher used statistical analysis at the significance level of a = 0.05 with degrees of freedom (df) = n - 1. For the result, if t-test > t-table, H_a is accepted, while H_0 is rejected. Meaning that Undercover Game is effective to improve students' vocabulary. While, if t-test < t-table, H_0 is accepted, while H_a is rejected. Thus, Undercover Game is not effective to students' vocabulary achievement.

Calculating Effect Size

The term "effect size" refers to a metric that provides insight into the significance of one's research findings (Mackey & Gass, 2021, p. 233).To calculate the effect size of this research, this following formula is used:

$$ES = t\sqrt{\frac{1}{n}}$$

Table 1. Classification of Effect Size

Effect Size	Classification
0 – 0.1	Week
0.1 – 0.3	Moderate
0.3 – 0.5	Modest
≥ 0.5	Strong

(Muijs (2022, p. 162)

3. RESULTS AND DISCUSSION
Results

To test whether the Undercover Game impacts significantly and effectively on students' vocabulary achievement, the researcher conducted data analysis based on the formulated research questions. The t-test formula was used to answer the first research question, after preparing the pre-test and post-test total and average score tables. Meanwhile, the effect size formula, which requires the t-test value of the first research question, was used to answer the second research question. Therefore, the sequence of calculations includes the average of pre-test and post-test scores, the average of score differences between pre-test and post-test, t-

test calculation, hypothesis testing, and effect size.

The Result of total score for Each Student

In the initial stage, the researcher calculated the individual scores of students using the formulation available in the calculation table.

No	X1 Pre-test	X2 Post-test	D Difference	D2
1	60	72	12	144
2	64	88	24	576
3	64	76	12	144
4	72	84	12	144
5	60	72	12	144
6	64	80	16	256
7	56	72	16	256
8	64	80	16	256
9	56	72	16	256
10	68	84	16	256
11	68	84	16	256
12	72	84	12	144
13	64	80	16	256
14	64	76	12	144
15	60	72	12	144
16	68	80	12	144
17	72	84	12	144
18	72	76	4	16
19	60	72	12	144
20	60	76	16	256
21	76	88	12	144
22	72	80	8	64
23	60	72	12	144
24	60	72	12	144
25	72	76	4	16
26	60	72	12	144
27	64	76	12	144
28	64	72	8	64
29	60	80	20	400
30	68	80	12	144
31	72	84	12	144
32	64	72	8	64
	$\sum X^1$ 2080	$\sum X^2$ 2488	$\sum d$ 408	$\sum d^2$ 5696
	M_1=65	M_1=77.75		

Figure 1. Students' Score Results

The mean score of Pre-test and Post-test

The total pre-test and post-test scores from thirty-two students of eleventh grade Social Science students were 2080 and 2488, respectively. To get the average score of each test, the total score was divided by the number of students in the group. Below is the formula used to determine the mean score of pre-test and post-test, correspondingly.

Pre-test:
$$M_1 = \frac{\sum X}{n}$$
$$M_1 = \frac{2080}{32}$$
$$M_1 = 65$$

Post-test:
$$M_2 = \frac{\sum X}{n}$$
$$M_2 = \frac{2488}{32}$$
$$M_2 = 77.75$$

The Difference of Pre-test and Post-test Scores

After determining the average score on each test, the researcher then calculated the interval between the means of the two tests using the following formulation:

$$MD = M_2 - M_1$$

$$MD = 77.75 - 65$$

$$MD = 12.75$$

The Calculation of t-value

To answer the first research question using the t-test, the data from the pre-test and post-test was presented to evaluate the effect of Undercover game on students' vocabulary achievement. After the treatment was given, the t-test score was 18.21, as seen below:

$$t = \frac{MD}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{n}}{n(n-1)}}}$$

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$$t = \frac{12.75}{\sqrt{\dfrac{5696 - \dfrac{(408)^2}{32}}{32\,(32-1)}}}$$

$$t = \frac{12.75}{\sqrt{\dfrac{5696 - \dfrac{(166464)}{32}}{32\,(31)}}}$$

$$t = \frac{12.75}{\sqrt{\dfrac{5696 - 5202}{992}}}$$

$$t = \frac{12.75}{\sqrt{\dfrac{494}{992}}}$$

$$t = \frac{12.75}{\sqrt{\dfrac{494}{992}}}$$

$$t = \frac{12.75}{\sqrt{0.49}}$$

$$t = \frac{12.75}{\sqrt{0.7}}$$

$$t = 18.21$$

To find out that the probably the researcher is correct or incorrect when saying that the null hypothesis is rejected. The researcher needs to set the probability level. The significance level can be set at confidence interval of 0.05 on mean. Therefore, the researcher set the level of probability at 0.05.

By referring to the t test formula, the researcher obtained a t value of 18.21, and then referring to the t distribution table at the 5% significance level (t table) with degrees of freedom (df) = N1 -1 and find the df result of 31. Therefore, the value contained in the t table is 2.039 at the 0.05 significance level. This result indicates that the t test > t table (18.21>2.039). The significant difference can be interpreted as a significant impact on students' vocabulary achievement after the treatment using Undercover Game application.

Hypothesis Testing

From the results of the above calculations, a t value of 18.21 was obtained, which exceeds the t table value (18.21>

2.039). This occurs at a degree of freedom of 31 (df = 31) and a confidence level of (p = 0.05). These results indicate that the use of Undercover Game impacts significantly on increasing vocabulary achievement of eleventh grade students of SMA Negeri 10 Pontianak in academic year 2022/2023. Thus, the alternative hypothesis is accepted, while the null hypothesis is rejected.

The Effect Size

After carrying out the t-test, the results of hypothesis testing showed that Ha was accepted, indicating that the use of Undercover Game in grade eleven Social Science students at SMA Negeri 10 Pontianak affected students' vocabulary achievement. And then, the researcher investigated the extent of the effect. To conduct this investigation, the effect size analysis of the use of Undercover Game was calculated using the effect size formula.

The t-test score reached 18.21, and the number of students of thirty-two was calculated to measure the effect size. The calculation result of the effect size formula shows that the effect size of the treatment is 3.09. By referring to Muijs' (2022, p. 162) criteria in determining the effect size (see Table 3.4 Effect Size Classification), the result obtained exceeds 0.5 ($ES \geq 0.5$), considered as very strong. Therefore, it can be concluded that the use of Undercover Game has a very strong effect on students' ability in achieving vocabulary achievement.

Discussion

Through analyzing the information collected, it can be concluded that students have the potential to learn quickly and well. There is an improvement in students' understanding when learning explanatory text. This can also be reinforced by looking at the mean scores of the post-test that are higher than the pre-test scores, 2488 & 2080, respectively. Based on the findings, students' mean scores were affected or influenced by the Undercover Game app, and this effect

was more significant in the post-test than before teaching students using it.

From previous research findings, Rosyidi (2022) noted that students showed high enthusiasm in following English lessons throughout the learning process by implementing the Undercover Game strategy in the class. It can be attributed to increased students' vocabulary achievement due to learning experiences with technological media. This study shows that using Undercover Game to improve vocabulary achievement in students is very interactive and effective, along with increased test scores. In line with the previous research mentioned, in this study, the author conducted a pre-test to measure students' learning achievement.

4. CONCLUSION

Based on the results, the researcher presents two main conclusions. First, the use of Undercover Game has a significant impact on students' vocabulary achievement. This is evident from the t-test calculation, where the t-test (18.21) > t-table (2.039) at the degree of freedom (df = 31) and confidence level (p=0.05). This indicates that the h_a is accepted, while h_0 is rejected. Secondly, the effect size of using Undercover Game on eleventh grade Social Studies students at SMA Negeri 10 Pontianak, particularly in Social Studies 2 class, showed the significance difference between the pre-test and post-test results after the treatment using Undercover Game on students' vocabulary achievement. The effect size score was 3.09.

SUGGESTION

In this section, the researcher presents two points of advice addressed to the teachers and other researchers. First, the researcher suggests that English teachers at SMA Negeri 10 Pontianak can consider using the Undercover Game application as a teaching and learning method. It can provide a new atmosphere for students to encounter and understand the new vocabulary that they

have. It allows students to ensure that the Undercover Game is connected to the targeted learning outcomes and is suitable for them. The second, English teachers at SMA Negeri 10 Pontianak should combine learning methods with the digital era by utilizing technology so students can experience technology-based learning. And lastly, for other researchers interested in using a learning media, it would be better to consider a review of the literature or theory from experts as a benchmark in the process of accordance with the characteristics and curriculum of education.

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