

Quasi-Experimental Study on Using Undercover Games to Improve Vocabulary Mastery of Eighth Graders

Gigih Indra Ramadhan^{1)*}, Sumartono²⁾, Masfuad Edy Santoso³⁾

¹Program Studi Ilmu Pendidikan Bahasa Inggris, Universitas Pancasakti Tegal.

*E-mail Korespondensi: gigihindra6@gmail.com

Abstract

Vocabulary mastery is a fundamental challenge for English learners, as traditional teaching methods often fail to maintain student engagement and retention. The purpose of this study is to examine the effectiveness of the "Undercover Game" on students' vocabulary mastery and to identify significant differences between students taught using this technique and those taught through conventional methods. This quantitative research employed a quasi-experimental design involving a population of 282 students, with a sample of 63 students from SMP Negeri 1 Dukuhturi. The study was conducted over three weeks, where the experimental group received treatment using the Undercover Game, a gamification technique focusing on hidden word identification through clues and social interaction while the control group followed traditional instruction. Data were collected using pre-test and post-test instruments and analyzed using SPSS version 25. The results revealed a significant difference in mean scores between the two groups, evidenced by a t-value of -3.849 and a 2-tailed significance level of 0.000 ($p < 0.05$). The mean difference of -8.714 explicitly indicates that the group taught using the Undercover Game achieved substantially higher vocabulary learning outcomes. In conclusion, this study demonstrates that the Undercover Game is an effective tool for enhancing English vocabulary mastery. Therefore, it is recommended that teachers utilize gamification techniques as an engaging and effective alternative to improve learning outcomes in the classroom.

Keywords: *Undercover Game; Vocabulary Mastery; Gamification;*

1. INTRODUCTION

Vocabulary mastery stands as a fundamental pillar in English Language Teaching (ELT), acting as the primary vehicle for students to understand and express complex ideas. As explained by Hounhanou (2020), learners with a broader vocabulary possess a superior ability to decode auditory and written information while articulating their thoughts more effectively. In the Indonesian educational landscape, the importance of vocabulary is further amplified by the implementation of the Merdeka Curriculum. Unlike previous curricula, this framework integrates vocabulary acquisition directly into functional language skills rather than treating it as a standalone subject. This contextual approach requires students to not only recognize words but also to utilize them across various genres, such as recount, narrative, and descriptive texts (Kemendikbudristek, 2021). However, despite its critical role, vocabulary remains one of the most challenging components of language learning due to its lack of rigid rules compared to syntax or phonology (Eliah & Suma, 2019).

The challenges of vocabulary acquisition in Asia, and specifically in Indonesia, often stem from the lack of authentic exposure to English as a foreign language. Students frequently struggle with retention, reporting that while they invest significant effort in memorization, the words are easily forgotten (Xiaomei, 2020). Riddell (2013) identifies three core difficulties in this process: understanding the meaning, mastering the form, and achieving correct pronunciation.

Furthermore, traditional teaching methods often characterized by rote memorization and list-based learning often fail to engage students' interest, leading to a passive learning environment where students feel unmotivated to participate (Sahrin & Hasan, 2019). This pedagogical gap necessitates a shift toward more interactive and cognitively stimulating methodologies that can bridge the divide between theoretical knowledge and practical application.

To address these pedagogical barriers, gamification has emerged as a highly effective medium in modern English language teaching. Games offer more than just entertainment; they provide a "catharsis" from the monotony of classroom routines while offering inspiring challenges that encourage students to experiment with language (Gozcu & Caganaga, 2016). Lewis and Bedson emphasize that games naturally foster a social environment where even passive students feel empowered to express ideas and emotions, thus enhancing overall collaboration (Azar, 2012). However, the success of a game in an educational setting depends heavily on its mechanics. A game must be more than simply engaging; it must challenge students to analytically process vocabulary in a social context. This requirement has led to the exploration of innovative deductive social games that go beyond simple flashcards or word lists.

Among the wide variety of games that utilize game elements, the "Undercover Game" presents unique and underutilized potential for vocabulary teaching. This deductive social game revolves around hidden roles Civilian and Undercover where players must describe secret keywords to identify the "impostor" among them. Unlike traditional games, the Undercover Game inherently requires strategic language use; players must craft descriptions that are clear enough for their allies but ambiguous enough to mislead their opponents. This mechanism forces students to explore the depth and breadth of their vocabulary, focusing on synonyms, antonyms, and contextual clues. Despite its potential, the use of the Undercover Game in English language teaching remains largely underexplored in the academic literature. Most research in Indonesia still focuses on more common tools like Kahoot or Quizizz, leaving a gap in understanding how deductive role-playing games impact lexical retention and acquisition.

Based on the challenges mentioned above and the clear need for innovative pedagogical tools, this study aims to fill the research gap by empirically testing the effectiveness of the Undercover Game. The significance of this study lies in its potential to offer a fresh, interactive alternative for teachers facing the integrated demands of the Independent Curriculum. Specifically, this study seeks to determine whether there is a statistically significant increase in students' vocabulary mastery following the intervention. It is hypothesized that the social interaction and deductive reasoning required by the Undercover Game will result in higher learning outcomes compared to conventional teaching methods. Thus, this study, entitled "The Effect of the Undercover Game on Students' Vocabulary Mastery," is expected to make a meaningful methodological contribution to the field of English language teaching in the Indonesian context.

2. METHOD

Research Design

This study used a quantitative approach to objectively measure the impact of the treatment on student learning outcomes. As defined by Sugiyono (2012), quantitative research involves investigating a problem based on testing a theory using numerical measurements and statistical

analysis. Specifically, a quasi-experimental design was adopted. This design is well-suited to educational settings where random assignment of students to each individual is not feasible, necessitating the use of pre-existing or "intact" groups (Creswell, 2014).

Research Time and Place

This research was conducted at SMP Negeri 1 Dukuhturi during the odd semester of the 2025/2026 academic year. The experimental procedures, including the administration of the pre-test, the Undercover Game intervention for the experimental group, and the post-test, were carried out systematically to evaluate the improvement in students' vocabulary mastery.

Object of Study

The study population consisted of all eighth-grade students at SMP Negeri 1 Dukuhturi, totaling 282 students across nine classes. Following the principle of cluster random sampling, which samples naturally occurring groups rather than individuals (Sugiyono, 2016), two classes were selected: Class VIII G as the experimental group and Class VIII I as the control group. To ensure data integrity, the final analysis focused on 56 students (28 from each class) who maintained consistent attendance throughout the treatment period (Arikunto, 2010).

Research Procedure

The research framework followed a pre-test and post-test design involving two groups: an experimental group and a control group. The experimental group received the Undercover Game intervention, while the control group was taught using conventional methods. The primary objective was to evaluate the effect of this intervention on students' vocabulary mastery during the odd semester of the 2025/2026 academic year at SMP Negeri 1 Dukuhturi.

Research Instrument

The main instrument used was a 30-item multiple-choice test focusing on functional vocabulary, specifically verbs and adjectives in recount and narrative contexts. According to Sugiyono (2011), the quality of a quantitative instrument is determined by its validity and reliability. Initially, 45 items were developed, but after rigorous testing, only 30 were found valid using Pearson Product-Moment correlation. Reliability was further confirmed using Cronbach's Alpha to ensure instrument stability. Data collection followed a systematic three-stage process: a pre-test to establish baseline equality, a three-week treatment phase, and a post-test to measure significant changes.

Technique of Analyzing Data

Data were processed using SPSS 25. Prior to hypothesis testing, prerequisite tests, including the Shapiro-Wilk test for normality and Levene's test for homogeneity, were conducted to ensure the data met parametric assumptions. The primary analysis used an Independent Samples t-test to determine the statistical significance of the differences between the two groups. Furthermore, to measure the practical significance of the Undercover Game, Cohen's d formula was applied to calculate the effect size, providing a comprehensive understanding of the intervention's actual pedagogical effectiveness (Funder & Ozer, 2019).

3. RESULT AND DISCUSSION

Descriptive Statistics

The main objective of this study was to evaluate the effect of the Undercover Game on students' vocabulary mastery. Data were collected from 56 students, divided into an experimental group (Grade VIII G) and a control group (Grade VIII I). A summary of the pre-test and post-test results is presented in Table 1.

Table 1. Descriptive Statistics of Students' Vocabulary Scores

Class	Test	N	Mean	Min Score	Max Score
Experiment	pre-test	28	65.36	52	76
Experiment	post-test	28	79.68	63	96
Control	pre-test	28	63.14	40	81
Control	post-test	28	70.96	51	90

As shown in Table 1, the experimental group's mean score improved significantly from 65.36 to 79.68 after the treatment. Meanwhile, the control group, which was taught using conventional methods, showed a smaller increase from 63.14 to 70.96.

Prerequisite Test: Normality and Homogeneity

Before conducting hypothesis testing, normality and homogeneity tests were performed as prerequisites for parametric analysis. Normality tests using the Kolmogorov-Smirnov and Shapiro-Wilk tests showed that the pre-test and post-test data for the experimental and control groups were normally distributed ($p > 0.05$). Specifically, the post-test significance value was 0.521 for the experimental group and 0.828 for the control group. Next, Levene's test was used to check for homogeneity of variance. The results showed that the variances were equal for the pre-test ($p = 0.113$) and post-test ($p = 0.688$) data. Because the significance value exceeded 0.05, the data met the criteria for further parametric statistical testing using the independent samples t-test.

Hypothesis Testing

To determine whether the Undercover Games had a significant impact on vocabulary mastery, an independent-samples t-test was conducted on the post-test scores of both groups.

Table 2. The Table of Independent Sample Test

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.163	0.688	-3.849	54	0.000	-8.714	2.264
Equal variances not assumed			-3.849	53.714	0.000	-8.714	2.264

The results in Table 2 show that the p-value (Sig. 2-tailed) is 0.000, which is lower than the significance level ($\alpha = 0.05$). Therefore, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted. This indicates a statistically significant difference in

vocabulary achievement between students taught using Undercover Games and students taught using conventional methods.

Effect Size Analysis

To measure the magnitude of the treatment effect, Cohen's *d* was calculated. The analysis yielded a value of 1.03, which, according to Cohen's classification, represents a "Strong Effect." This indicates that the use of the Undercover Games not only produced a statistical difference but also provided substantial practical improvement, with the experimental group performing 1.03 standard deviations higher than the control group.

CONCLUSION

Based on the analysis and discussion, this study confirms that the Undercover Game had a significant and measurable impact on the vocabulary mastery of eighth-grade students at SMP N 1 Dukuhuri. Statistical validation showed a substantial increase in the experimental group's mean score, rising from 65.36 to 79.68 (a 14.32-point increase), significantly outperforming the control group. Furthermore, Cohen's effect size of 1.03 categorizes this impact as "large," proving that this method is not only statistically significant but also practically superior to conventional route-based instruction.

The effectiveness of this intervention lies in its cognitive and psychological mechanisms. Theoretically, the significant improvement aligns with the Depth of Processing theory, as students are required to analyze clues and strategically negotiate meaning. This intensive cognitive process ensures that vocabulary is processed at a deeper level, resulting in better long-term retention. As Susanto (2017) stated, vocabulary is the primary foundation for communicative competence; By engaging deeply with words during the game, students build these competencies more naturally.

Furthermore, the Undercover Game serves as a successful psychological intervention. The game's fun and competitive nature successfully reduces the Affective Filter (Krashen, 2014), creating a safe environment where students are more willing to practice "Productive Vocabulary" (Ahmed, 2019). This positive atmosphere fosters intrinsic motivation and reduces anxiety inhibition, allowing students to construct sentences spontaneously. This balance between entertainment and educational objectives follows the principles of effective game design (Plass et al., 2020), shifting the learning dynamic from a teacher-centered approach to a student-centered one (Maulidina et al., 2018).

In conclusion, the Undercover Game provides a comprehensive solution to the challenges of vocabulary acquisition in EFL contexts. The game not only improves academic performance but also transforms the classroom into a lively, interactive, and productive environment. These findings offer a strong foundation for English language teachers to adopt and modify the Disguise Game as a proven effective pedagogical tool to promote sustained language acquisition in junior high school settings.

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