

From Play to Proficiency: The Power of the Word Connection Game on Students' Vocabulary Development

Jihan Selasih S¹, Jamiluddin², Afrillia Anggredi³, Mochtar Marhum⁴

^{1,2,3,4} Universitas Tadulako, Palu, Indonesia

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ABSTRACT

Currently, digital games dominate 21st-century classrooms; however, non-digital games remain valuable for promoting language learning, especially in areas with limited internet access. This study aimed to determine whether the Word Connection Game can enhance students' vocabulary mastery. A quasi-experimental design was employed, involving two randomly selected classes: X M4 as the experimental group (28 students) and X M1 as the control group (28 students). Both groups were administered pre-tests and post-tests to collect data. The findings showed that the experimental group achieved a higher average post-test score (87.61) compared to the control group (60.68). The Mann-Whitney U test indicated a statistically significant difference between the groups (Asymp. Sig. 2-tailed = 0.000 < 0.05), supporting the alternative hypothesis. These results demonstrate that the Word Connection Game is an effective and engaging non-digital approach for enhancing students' vocabulary skills. The study highlights that traditional game-based strategies remain valuable for fostering active learning and vocabulary retention, even in the digital era.

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Corresponding Author:

Jihan Selasih S

Faculty of Teacher Training and Education, Department of Language and Art Education, Tadulako University

Email: jihanselasih@gmail.com

1. INTRODUCTION

Vocabulary is one of the fundamental aspects of learning the English language. It serves as the basic component of the language and plays a crucial role in both teaching and learning [1]. Without sufficient vocabulary, students cannot communicate effectively, express their ideas accurately, or participate actively in conversations. Therefore, developing students' vocabulary mastery is essential for supporting their overall English proficiency. In this context, vocabulary becomes not only a linguistic requirement but also a foundation for academic performance and communicative competence in EFL settings.

In the Emancipated Curriculum, tenth-grade senior high school students are expected to understand and use various types of vocabulary, including nouns, verbs, and adjectives, in meaningful sentences [2]. However, preliminary observations at SMAN 5 Palu revealed several problems related to students' vocabulary mastery. Many students struggled to understand word meanings, had difficulty following the teacher's explanations, and were unable to use vocabulary accurately in sentences. These challenges often resulted in boredom, reduced participation, and low learning motivation. Such issues stem from internal factors, such as a lack of interest, weak motivation, and negative attitudes toward English, as well as external factors, including ineffective teaching methods, limited family support, and inadequate learning facilities. These findings suggest that conventional instructional approaches may not adequately address students' learning needs, particularly in stimulating engagement and promoting vocabulary retention.

To address these challenges, the researcher seeks an engaging and effective strategy that can stimulate students' interest and improve their vocabulary mastery. One promising approach is the use of game-based learning. Games help teachers connect students' motivation with their learning goals by creating an enjoyable and interactive learning environment. Games instruction is also reported to help English language learners bridge the gap in achieving English proficiency [3]. Furthermore, studies show that game-based learning not only increases enjoyment but also enhances students' engagement with the learning material. According to Dwirahmita [4], games motivate students to learn vocabulary through repetition and competition. In addition, games promote cognitive engagement because students must think actively, make quick decisions, and process words meaningfully, which encourages greater classroom participation. Research also indicates that games can significantly strengthen vocabulary retention [5]. Thus, game-based learning emerges as a relevant pedagogical alternative capable of addressing motivational and cognitive barriers commonly faced in vocabulary instruction.

One effective game that can be applied in vocabulary learning is the Word Connection Game. In this activity, students produce a word that begins with the last letter of the previous word, encouraging quick thinking, word recall, and meaningful interaction. Previous studies support its effectiveness. Tanasy and Ali [6] reported that the Word Connection Game enhances students' vocabulary mastery and makes learning more enjoyable and creative. Similarly, Wardani [7] found that the game helps strengthen memory links between words, enabling students to recall and apply vocabulary more effectively in communication. These findings demonstrate that the Word Connection Game offers both linguistic and psychological benefits, making it an effective tool for classroom-based vocabulary development.

While most studies focus on digital games for vocabulary development, few have examined the pedagogical power of simple non-digital word connection games in fostering active learning and vocabulary retention in Indonesian high schools. Previous research has confirmed the significant impact of digital game-based learning on vocabulary acquisition, motivation, and retention [8]. This gap highlights the need to explore how traditional, low-cost, and easily implemented classroom games function in senior high school contexts, particularly among tenth graders at SMAN 5 Palu. Accordingly, investigating non-digital

game approaches becomes increasingly important, especially in regions where technological resources are limited or inconsistent.

Based on the issues and research gap described above, the researcher is interested in conducting a study entitled “*From Play to Proficiency: The Power of the Word Connection Game on Students’ Vocabulary Development.*” Therefore, this study aims to investigate the impact of the Word Connection Game on students’ vocabulary mastery in English as a Foreign Language (EFL) contexts. This study aims to provide empirical evidence on the effectiveness of traditional game-based strategies and contribute to the development of enriched pedagogical practices in EFL classrooms.

2. METHOD

This study employed a quasi-experimental design featuring a non-equivalent control group, with two classes: one serving as the experimental group and the other as the control group [9]. Both groups were administered a pre-test and a post-test; however, only the experimental group received the treatment using the Word Connection Game, while the control group was taught using a conventional method. The design can be illustrated as follows:

Table 1. The Research Design

Groups	Pre-test	Independent Variable	Post-test
Experimental Group	O1	X	O2
Control Group	O3		O4

The population for this study included all tenth-grade students at SMAN 5 Palu during the 2025/2026 academic year. Two classes were randomly chosen from this population as the study samples using a lottery method. This random sampling ensured that every student had an equal opportunity to be selected, enhancing the study’s reliability and validity, as noted by Febrisera & Sugirin [10]. The classes selected were X M4 for the experimental group and X M1 for the control group, with 28 students in each. Such sampling procedures ensured that the selected classes were representative of the population, minimizing selection bias and strengthening the credibility of the findings.

In the experimental class, students played the Word Connection Game for 25 minutes in each 90-minute session. Students took turns saying or writing words that began with the last letter of the previous word, focusing on parts of speech such as nouns, verbs, and adjectives. The control group, on the other hand, received instruction without games and followed conventional vocabulary teaching procedures. Both groups took pre-tests and post-tests to assess their vocabulary mastery before and after the intervention. The treatment was implemented consistently across sessions to ensure procedural uniformity, while the control class followed standard teaching steps typically used in the school’s English lessons.

The instrument used for this research was a written vocabulary assessment consisting of two sections: a pre-test and a post-test. The test was developed based on the tenth-grade English curriculum of SMAN 5 Palu. Both tests had similar structures, but the items differed to prevent memorization and ensure the accurate measurement of students’ progress. Two

English lecturers validated the test items and demonstrated reliability with a Cronbach's α of 0.84. The validity and reliability checks ensured that the test accurately and consistently measured vocabulary mastery, thereby strengthening the trustworthiness of the assessment results.

For data analysis, the study used a quasi-experimental design that involved comparing pre-test and post-test scores of the experimental and control groups. The data obtained were analyzed using SPSS version 27 to identify whether there were meaningful differences in students' vocabulary mastery before and after using the Word Connection Game. Non-parametric and descriptive analyses were also employed to accommodate variations in data distribution and to provide a comprehensive understanding of the treatment effects.

3. RESULTS AND DISCUSSION

Once all data from the pre-test and post-test given to both the experimental and control groups were collected, the researcher analyzed the results using the Mann-Whitney U test to assess if there was a significant difference in vocabulary mastery between the groups.

3.1 Results

The table with the descriptive stats shows the scores from the pre-test for both the experimental and control groups. The experimental group consisted of 28 students, and their scores ranged from 24 to 67. The average score was 45.18, with a standard deviation of 14.583. The control group also had 28 students, with scores ranging from 24 to 62. Their average was 41.36, and the standard deviation was 10.314. These descriptive values indicate that both groups began the study with comparable vocabulary proficiency levels, although the experimental group showed slightly higher variance in score distribution.

Table 2. Pre-test Results of the Experimental and Control Groups

Group	N	Mean	Std. Dev.	Min	Max
Experimental	28	45.18	14.583	24	67
Control	28	41.36	10.314	24	62

The pre-test findings indicated that both the experimental and control groups possessed nearly the same level of vocabulary mastery prior to the treatment. This resemblance strengthens the study's validity, as any improvement observed in the post-test results can be more reliably linked to the application of the Word Connection Game rather than to initial disparities between the groups. This baseline equivalence is essential in quasi-experimental research because it confirms that subsequent score differences are attributable to the intervention rather than pre-existing conditions.

The post-test outcomes demonstrate how both groups performed following the treatment. The experimental group achieved scores between 76 and 95, with an average of 87.61, while the control group obtained scores from 55 to 83, with a lower mean of 60.68. These results indicate that the experimental group achieved significantly higher vocabulary mastery than the control group, which received traditional instruction. The difference in

mean scores (87.61 vs. 60.68) indicates that the implementation of the Word Connection Game had a substantial positive effect on students' vocabulary mastery. Therefore, it can be interpreted that the use of the Word Connection Game was more effective in improving students' vocabulary achievement than the non-game approach applied in the control group. The relatively small standard deviation in both groups also suggests a consistent performance trend among students within each group.

Table 3. Post-test Results of the Experimental and Control Groups

Group	N	Mean	Std. Dev.	Min	Max
Experimental	28	87.61	5.852	76	95
Control	28	60.68	5.703	55	83

The normality test results show that the data distributions in both the experimental and control groups differed between the pre-test and post-test [11]. For the control group, the Kolmogorov–Smirnov and Shapiro–Wilk test results were 0.163 and 0.087 before the test, and 0.226 and 0.000 after the test. Most of these numbers were below 0.05, which means the data were not normally distributed. In the experimental group, the results were 0.164 and 0.021 before the test, and 0.188 and 0.009 after the test. Again, most of these values were below 0.05, showing the data was not normally distributed either. Overall, the data from the study did not follow a normal distribution. Because of this, a non-parametric test called the Mann–Whitney U Test was used to compare the results after the test between the two groups, making sure the analysis was accurate and reliable. This step ensured that statistical conclusions were based on appropriate analytical procedures aligned with the characteristics of the dataset.

Table 4. Tests of Normality

Class	Kolmogorov-Smirnov ^a			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Vocabulary Mastery	Pre-test Control (Conventional method)	.163	28	.056	.936	28	.087
	Post-test Control (Conventional method)	.226	28	.001	.739	28	.000
	Pre-test Experimental (Word Connection Game)	.164	28	.052	.911	28	.021
	Post-test Experimental (Word Connection Game)	.188	28	.013	.894	28	.009

Table 5. Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Vocabulary Mastery	Based on Mean	.401	1	54	.529
	Based on Median	.597	1	54	.443
	Based on Median and with adjusted df	.597	1	52.589	.443
	Based on the trimmed mean	.630	1	54	.431

Levene's test for homogeneity of variances at a 0.05 significance level produced significance values of 0.529 (Based on Mean), 0.443 (Based on Median), 0.443 (Based on Median with adjusted degrees of freedom), and 0.431 (Based on Trimmed Mean). Since all these values exceed 0.05, it indicates that the variances are homogeneous, meaning the experimental and control groups have equal variances [12]. However, as the earlier normality test showed the data were not normally distributed, a non-parametric statistical test was used for further analysis to ensure accuracy and reliability. The combination of homogeneous variances and non-normal distributions further justified the selection of the Mann–Whitney U test as the primary inferential analysis.

Table 6. Mann-Whitney U Test

Test Statistics ^a	
	Vocabulary Mastery
Mann-Whitney U	6.000
Wilcoxon W	412.000
Z	-6.372
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Class

Table 6 shows the results from the Mann–Whitney U test. This test was used to check if there was a significant difference in vocabulary mastery between the experimental group and the control group. The test was selected because the data did not follow a normal distribution, as found in the normality test, so a non-parametric method was more suitable. [13]. According to the table, the Mann–Whitney U value is 6.000, and the Z value is -6.372, indicating a statistically significant difference between the groups. Additionally, the Asymp. Sig. (2-tailed) value is 0.000, which is below the 0.05 significance threshold, demonstrating that this difference is statistically significant.

Thus, it can be concluded that the Word Connection Game significantly improved students' vocabulary mastery. The experimental group, which learned through the Word Connection Game, outperformed the control group, which was taught using conventional methods. These findings support the idea that interactive, game-based learning techniques are more effective in enhancing vocabulary development than traditional teaching methods. Overall, the statistical evidence consistently confirms the effectiveness of the intervention and reinforces the robustness of the study's findings.

3.2 Discussion

The significant improvement in the experimental group confirms that vocabulary learning through interactive games enhances cognitive processing and memory consolidation. The findings revealed that students' vocabulary mastery was still relatively weak before the implementation of the *Word Connection Game*. Both the experimental and control groups showed difficulties in recalling and using English words accurately. Many students appeared passive and less motivated during non-game learning sessions, indicating

that these teaching methods were not fully effective in engaging students or supporting their vocabulary growth [14]. It confirmed that students needed more interactive learning experiences that could make vocabulary learning more interesting and meaningful [15].

Following the introduction of the Word Connection Game, the experimental group demonstrated a significant improvement in vocabulary mastery, as well as increased motivation for learning. Students became more enthusiastic, confident, and actively involved in the classroom. This aligns with previous research indicating that game-based learning is more effective in enhancing students' vocabulary acquisition than traditional non-game teaching methods [1]. The nature of the game encouraged them to connect words based on meaning, association, or the last letter, which required quick thinking and frequent word recall. Through these activities, students repeatedly encountered and used vocabulary in meaningful contexts, strengthening both their active and passive vocabulary [16]. This finding aligns with those of Nation [17] and Schmitt [18], who argue that vocabulary learning becomes more effective when learners engage with words repeatedly and in a meaningful way.

According to constructivist theory, learning occurs most effectively when students actively construct meaning through interaction and engagement. The Word Connection Game supports this principle by requiring learners to retrieve, connect, and apply vocabulary in context. Instead of passively receiving information, students engaged in producing, associating, and recalling words, which fostered deeper cognitive processing [19]. The repetitive yet meaningful nature of the activity enabled students to strengthen memory links and build stronger vocabulary networks.

These findings also align with earlier studies that emphasize the positive impact of game-based learning. Tanasy & Ali [6] and Rahmadani [20] found that language games increase students' engagement and make learning vocabulary more enjoyable, while Garhani & Basikin [21] reported that game-based learning enhances students' motivation and classroom participation. In this study, students in the experimental group demonstrated greater enthusiasm and improved teamwork compared to those in the control group. The *Word Connection Game* fostered a lively and cooperative learning atmosphere, where students were encouraged to share ideas, participate actively, and enjoy the process of learning new words.

Another reason for the success of the *Word Connection Game* lies in its student-centered nature. Instead of relying solely on teacher explanations, students were given opportunities to explore and connect words independently, which enhanced their critical thinking, creativity, and communication skills. In fact, game-based learning has been shown to significantly boost students' creative thinking and collaborative skills [22], making the learning environment more interactive and student-centered [23]. This shift from teacher-centered to student-centered learning allowed students to take more responsibility for their own progress. It also made the class more dynamic and interactive, helping students overcome anxiety and participate with greater confidence.

The classroom environment improved noticeably during the implementation of the *Word Connection Game*. Students became more curious, cooperative, and engaged in every learning session. The game created a positive and enjoyable atmosphere, reducing boredom

and helping students learn vocabulary in a more relaxed and meaningful way [24]. These results support the idea that communicative and interactive learning approaches can enhance students' involvement and achievement [25].

This study demonstrates that traditional low-cost game-based learning can be as effective as digital methods in fostering motivation and vocabulary retention, particularly in resource-limited schools. The Word Connection Game not only enhances vocabulary mastery but also offers a practical and accessible strategy for teachers to create engaging learning environments without relying on expensive technologies.

4. CONCLUSION

This study investigated the effectiveness of the Word Connection Game in enhancing vocabulary mastery among tenth-grade students at SMAN 5 Palu. The findings indicate that incorporating this game into classroom instruction has a positive influence on students' vocabulary development, promoting active engagement, meaningful word recall, and collaborative learning. These results suggest that game-based vocabulary activities can be an effective complement to traditional teaching methods. The study has practical implications for English teachers, particularly in fostering motivation and participation. The Word Connection Game provides a simple, low-cost, and interactive approach that encourages students to engage actively with vocabulary, think critically, and collaborate with peers during the learning process.

However, this research was limited to a single school, a single grade level, and a brief intervention period, which may affect the generalizability of the findings. Future studies are encouraged to explore similar game-based learning approaches over more extended periods, across different grade levels, or in developing other language skills such as speaking, reading, and writing. This study contributes to the broader educational community by demonstrating that traditional classroom games can effectively enhance vocabulary learning, even in resource-limited settings.

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