

# Enhancing Vocabulary Mastery Through Bamboozle Games: A Study on Second-Year Students of SMP Negeri 1 Bandar Seikijang

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## Abstract

This research investigated the effectiveness of Bamboozle games, an online game-based learning platform, in improving students' vocabulary mastery. This research employed a pre-experimental design utilizing a one group pre-test post-test. The respondents of this research were eighth-grade students at SMP Negeri 1 Bandar Seikijang, with 29 students selected through cluster random sampling. The instrument consisted of a 30 item multiple choice vocabulary test. The data were analyzed using SPSS 30 including normality testing, paired sample t-test, N-Gain score, and effect size. The result found there is an increase in scores from the pre-test to the post-test. The mean score was 62.86 in the pre-test and 77.83 in the post-test with N-Gain score in the medium category (0.44). The effect size Cohen's d demonstrated a strong practical effect. In conclusion, Bamboozle effectively enhances vocabulary mastery and can be applied as a supportive digital tool in English language teaching.

**Keywords:** Bamboozle; Digital Game-Based; Vocabulary Mastery

## INTRODUCTION

Vocabulary is an important element in a language acquisition because it directly affects the ability to understand and convey messages in communication. Richards, J.C. and Renandya (2002) state that vocabulary is the core of language skills, which speaking, listening, reading, and writing. Nation, (2001) emphasizes that vocabulary mastery consists of three main aspects namely form, meaning, and use. The form aspect includes how the word is spoken, written, and its word parts. The meaning aspect refers to what the word means, while the use aspect relates to how the word is used in context. These three aspects help learners fully understand and apply vocabulary in communication. Although vocabulary is a fundamental component of language learning, EFL (English as a Foreign Language) students at SMP Negeri 1 Bandar Seikijang experience difficulties in mastering it. In previous observations in the school, students struggled to retain new words, students encounter problems in using appropriate verb forms, organizing ideas with time connectives, applying expressions naturally in context, show low interest in English, classroom instruction often depends on textbooks and memorization, which tends to make learning passive. Thornbury (2002) notes that vocabulary learning continues to be one of the major challenges faced by EFL students. In this case, students need to be able to master vocabulary because it will help them master the language.

With the development of educational technology, various game-based digital platforms have begun to be used to help increase students' motivation and engagement in learning vocabulary. Game media such as Wordwall, Kahoot, Quizizz have been widely used in language learning. Wordwall provides interactive and interesting features that can motivate students to learn

vocabulary. However, one of the drawbacks of Wordwall is that students can access the links at any time, allowing them to share answers without teacher supervision Putra et al. (2024). Kahoot is also known to be effective in creating a fun competitive atmosphere, but this application tends to focus on quick quizzes without providing space for discussion or clarification of incorrect answers Bhuna (2023). Meanwhile, quizzes provides instant feedback that helps students know their results and mistakes in real time, but its use require personal devices, which has the potential to cause distractions if students misuse their devices Berutul & Siregar. (2024). These findings are in line with the study by Dwi Prastiwi & Lestari (2025), which concluded that digital game-based learning can improve vocabulary mastery and learning motivation, although each platforms has its own advantages and limitations.

Among these various digital media, Bamboozle as become one of the most popular platforms because it is easy to use, does not require students to have personal devices, and provides random questions that add to the excitement of learning. Aeni et al. (2024) explain that Bamboozle supports collaborative learning through team-based games and features that can be tailored to the needs of teachers. Previous studies have also shown the effectiveness of Bamboozle in improving vocabulary mastery. Fitriani et al.(2025) found that the use of Bamboozle had a significant impact on improving students' vocabulary scores. Similar result were reported by Nisa et al. (2024), who showed that Bamboozle helped improved vocabulary retention and active student participation during learning.

However, despite these encouraging findings reported in previous studies, most existing research has focused only on general improvements in vocabulary without examining which specific aspects of vocabulary knowledge are affected. Limited attention has been directed toward examining how Bamboozle contributes to the development of specific components of vocabulary knowledge namely form, meaning, and use, which are fundamental to achieving a comprehensive level of vocabulary mastery. In addition, this studies investigating a pre-experimental research design, remain limited. Therefore, this study aims to address these gaps by examining how Bamboozle contributes to the development of students' vocabulary mastery across these essential components in a junior high school context.

Based on the description above, this study aims to determine the effectiveness of using Bamboozle in improving the vocabulary mastery of second year students at SMP Negeri 1 Bandar Seikijang based on the aspects of form, meaning, and use. This study is expected to contribute new insights to the literature on technology-based vocabulary learning and provide empirical evidence regarding the effectiveness of Bamboozle in the context of EFL learning at junior high school level.

## **METHOD**

The researcher used a quantitative research design and categorized as a pre-experimental approach. Gay, L. R., Mills, G. E., & Airasian (2012) describe A pre-experimental design as research design that involves evaluating one group. The sample consisted of 29 students from class VIII.3 at SMP N 1 Bandar Seikijang, selected through cluster random sampling. The instrument used to collect data was a test consisting of 30 multiple-choice questions, which measured students' knowledge of word form, meaning and use. The data collection consisted of administering a pre-test, implementing four instructional sessions incorporating Bamboozle games, and administering a post-test. Data analysis was conducted using SPSS Version 30, including descriptive statistics, the Shapiro-Wilk normality test, a paired sample t-test to

examine score differences, N-Gain to determine the level of improvement, and Cohen’s d to calculate the effect size of the intervention.

## RESULTS AND DISCUSSION

### Results

The data for this research were collected from September 18<sup>th</sup> to October 16<sup>th</sup> 2025. The results obtained from the collected data are presented in the following section, which shows the findings of both the pre-test and post-test analyses.

### Descriptive Analysis

**Table 1.** Result of Descriptive Statistics

Statistics	Pre	Post
Mean	62.86	77.83
Median	60	80
Std. Deviation	11.338	10.945
Minimum	40	53
Maximum	90	100
Range	50	47

The Table 1 presents the descriptive statistics of the students’ pre-test and post-test scores, indicating an overall improvement in their performance. The mean score increased from 62.86 to 77.83, suggesting that the students gained a better understanding of vocabulary after being taught using the Bamboozle game. The median score also increased after the treatment from 60.00 to 80.00, indicating that the improvement was not limited to high-achieving students but occurred across a wider range of learners.

The standard deviation decreased slightly from 11.338 to 10.945, indicating that the students’ scores were more consistent after the treatment. The increase in the lowest score from 40 to 53 also shows this improvement. It means that even the students who had trouble before were able to do better. The maximum score also increased from 90 to 100, showing that the top students improved their performance after the treatment. The range of scores became smaller from 50 to 47, which means the students’ results were closer to the average. Having a smaller range and a higher minimum score that most students improved, and the class became more balanced in their learning.

### Normality Test

Before conducting hypothesis testing using a parametric method, it was necessary to ensure that the data satisfied the assumption of normality. To assess this, the Shapiro-Wilk test was performed using IBM SPSS Statistics Version 30.0.

**Table 2.** Result of Test Normality

	Komolgorov-Smirnov			Saphiro-Wilk		
	Statistics	df	Sig.	Statistic	df	Sig.
Pre	.159	29	.059	.957	29	.275
Post	.159	29	.057	.957	29	.282

Table 2 shows that the significance values for both the pre-test (0.275) and pos-test (0.282) were above the 0.05 criterion. These results indicate that the data met the assumption of normality, making them appropriate for further parametric testing.

### Paired Sample T-test

After confirming that the data were normally distributed, a Paired Sample T-test was conducted. This test was aimed to determine whether a significant difference existed between the students' pre-test and post-test scores.

**Table 3.** Paired Samples Statistics

Pair 1		Mean	N	Std. Deviation	Std. Error Mean
		Pre	62.86	29	11.383
	Post	77.83	29	10.945	2.032

Table 3 indicates that the mean score increased from 62.86 in the pre-test to 77.8 in the post-test. The 14.97 increase between the pre-test and post-test averages suggests a significant improvement in students' achievement following the treatment. This implies that is unlikely to have occurred by chance. Moreover, the standard declined from 11.338 to 10.945, indicating that students' scores became more uniform. These findings suggest that the treatment not only improved overall but also reduced variation among students' results.

### Paired Sample Correlation

**Table. 4** Result of Paired Correlation

		Paired Samples Correlations			
		N	Correlation	One-Sided p	Two-Sided p
Pair 1	Pre & Post	29	.876	<.001	<.001

Table 4 displays the result of the Paired Samples Correlation analysis. The findings reveal a strong positive correlation between the pre-test and post-test score ( $r= 0.876$ ,  $p< 0.001$ ), indicating that students who performed well on the pre-test tended to achieve similarly high scores on the post-test. This demonstrates a consistent pattern of performance across both assessments. The significance value ( $p=0.000$ ) confirms that this relationship is statistically meaningful and unlikely to occur by chance. Moreover, the strong correlation implies that students improvements following the treatment were closely linked to their initial knowledge, suggesting that the Bamboozle game had a uniform effect across the group rather than benefiting only certain individuals.

**Table 5.** Result of Paired Sample T-test

		Paired differences							
		95% Confidence Interval of the Difference							
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig (2-tailed)
Pair 1	Pre-Post	-14.966	5.564	1.033	-17.082	-12.849	-14.483	28	<.001

As shown in Table 5, the paired samples t-test was conducted to determine whether Bamboozle games produced a meaningful improvement in students’ vocabulary achievement. The test revealed a mean difference of -14.966, indicating an increase in students’ scores after the intervention and demonstrating that their vocabulary mastery improved when Bamboozle was used as an instructional tool.

**Table 6.** Result of Paired Samples Effect Sizes

		Standard Paired Samples Effect Sizes				
		Standardizer <sup>a</sup>	Point Estimate	95% Confidence Interval		
				Lower	Upper	
Pair 1	Pre - Post	Cohen's d	5.564	-2.689	-3.473	
					1.894	
		Hedges' correction	5.719	-2.617	-3.379	
					1.843	

Table 6 shows the effect size of the treatment as calculated using both Cohen’s d and Hedges’ g. The results yielded a Cohen’s d of -2.689 and Hedges’ g of -2.617, both of which indicate a large effect size. The negatives values merely reflect the direction of the difference, with post-

tets scores being higher than pre-test scores, rather than implying a negative impact of the treatment. The magnitude of these effect sizes demonstrates a strong and meaningful influence. This confirms that the use of Bamboozle Game as a learning tool significantly enhanced students' vocabulary mastery.

Additionally, the narrow confidence interval, ranging from -3.474 to -1.894, suggests that the improvement was consistent across students. This indicates that the intervention was effective for both high and low performing learners. Although the overall effect size was large, the improvement may not have been equally pronounced across all components of vocabulary mastery. Therefore, the next section explores this in detail by examining the gain scores for each specific element of vocabulary mastery.

**N-Gain**

**Table. 7** N-gain Resultts

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Ngain	29	0.11	1.00	0.4404	0.19582
Valid N (listwise)	29				

Based on the results of the N-gain score above, the average value of the gain score is 0.4404 included in the medium category. It can be said that the students' vocabulary mastery in the post-test is higher than in the pre-test. Detailed N-gain results for each vocabulary indicator are provided in the following table.

**Table. 8** Result of N-gain Scores

Ngain Indicator					
Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Noun	29	.00	1.00	.3966	.41177
Irregular Verb	29	.00	1.00	.4655	.49877
Regular Verb	29	.00	1.00	.4828	.50855
Adjective	29	.00	1.00	.2414	.34683
Time Connectives	29	-1.00	1.00	.4276	.43979
Expression	29	-.50	1.00	.1507	.25692
Valid N (listwise)	29				

Table 8 shows how students' vocabulary improved across different components after using the Bamboozle games. The highest gains were seen in regular verbs (0.4828) and irregular verbs (0.4655), indicating that students developed a strong understanding of verb patterns. Time connectives also improved notably (0.4276), likely because words like "first, after, and before" frequently appeared in the games' instructions. Students made moderate gains in nouns (0.3966), as the game's visuals and context supported their learning of objects and people.

Smaller improvements were observed in adjectives (0.2414) and expressions (0.1507), because these aspect likely harder to learn and depend on context. Expressions, in particular, require not only vocabulary knowledge but also the ability to use language appropriately in real-life situations, which may take more time to develop. Overall, the Bamboozle games had a positive effect on most vocabulary areas, especially verbs and time connectives, while expressions remained the most challenging. These results suggest that games could include practical activities, like dialogues or situational tasks, to help students use language more effectively.

## Discussion

The findings of this study indicate that the use of Bamboozle significantly improves students' vocabulary mastery. These results are consistent with previous studies that also show that Bamboozle is effective as a game-based learning medium. Fitriani et al. (2025) found that Bamboozle helps improve vocabulary learning outcomes through interactive and competitive activities, in line with the increase in post-test scores obtained by students in this study. Similarly, research by Nisa et al. (2024) shows that Bamboozle makes it easier for students to understand descriptive vocabulary through interesting and contextual exercises. In addition, the findings of this study also support the result of Sakdiyah et al. (2024), which state the use of digital games such as Bamboozle can increase student motivation and active participation during learning. Students in this study appeared to be more enthusiastic when participating in games and were quicker to understand vocabulary through competitive learning experiences.

Research by Ningsih & Sujarwati (2025) also confirms that Bamboozle can create a collaborative learning atmosphere, which makes it easier for students to support each other in understanding the material. This is in line with the classroom conditions in this study, where teamwork played a role in improving learning outcomes. Furthermore, the results of this study reinforce the findings of Aryansyah (2024), who stated that game-based learning media not only improves vocabulary scores but also helps create more student-centered learning. Similar to previous studies, this study shows that structured, simple, and easy to understand games such as Bamboozle help students focus more on memorizing and using new vocabulary. Thus, all previous studies support that Bamboozle is an effective medium that is easy implement and capable of having positive impact student's vocabulary mastery.

## CONCLUSION

The findings of this study indicate that the use of Bamboozle had a clear and positive influence on students' vocabulary mastery. The results show noticeable improvement in students' overall performance after using Bamboozle, demonstrating enhanced understanding and retention of vocabulary. Most students improved in recognizing word forms, understanding meanings, and using vocabulary in simple contexts, although using expressions in sentences still remained the most challenging part. Overall, Bamboozle made vocabulary learning more engaging and enjoyable, encouraging students to participate actively and helping them remember new words better. Based on these results, teachers are advised to utilize Bamboozle as an interactive learning medium that is used regularly and tailored to learning objectives. Students are expected to actively utilize this game to increase motivation and vocabulary retention. Schools need to support the use of digital media by providing facilities and training for teachers. Furthermore, other researchers can explore the effectiveness of Bamboozle in other language skills, different levels, and various learning modes to broaden the understanding of the role of game-based learning in language learning.

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