

## The Effectiveness of Quiz through WordWall Media toward Students' Vocabulary Mastery

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### Abstract

*Traditional vocabulary learning methods often fail to engage students and support long-term retention. To address this, educators need a more interactive, technology-driven approach. This study investigates how effectively WordWall-based quiz media enhances the vocabulary mastery of seventh-grade students at MTS Al-Isro Batealit Jepara. This quasi-experimental design divided students into two groups: an experimental group that used WordWall media and a control group that followed conventional instruction. This research collected data through pretests and posttests and analyzed the results using paired sample t-tests and independent sample t-tests to measure differences within and between the groups. The findings revealed a significant improvement in the experimental group, which achieved an N-gain score of 75.16%, compared to 56.95% in the control group. Statistical analysis confirmed a significant difference between the two groups (Sig. = 0.000), highlighting the effectiveness of interactive digital media over traditional methods. These results underscore WordWall's potential as a transformative educational tool that fosters a more dynamic and engaging learning experience. Nonetheless, issues such as technology access and the need for further research across diverse educational contexts remain important considerations.*

**Keywords:** WordWall media, Vocabulary mastery, Language learning

### Abstrak

Metode pembelajaran kosakata tradisional sering kali gagal melibatkan siswa dan mendukung retensi jangka panjang. Oleh karena itu, pendidik memerlukan pendekatan yang lebih interaktif dan berbasis teknologi. Penelitian kuasi-eksperimen ini mengkaji seberapa efektif media kuis berbasis WordWall dalam meningkatkan penguasaan kosakata siswa kelas VII di MTS Al-Isro Batealit Jepara. Para peneliti membagi siswa menjadi dua kelompok: kelompok eksperimen yang menggunakan media WordWall dan kelompok kontrol yang mengikuti pembelajaran konvensional. Data penelitian dikumpulkan melalui pretest dan posttest untuk dianalisis menggunakan uji-t sampel berpasangan dan uji-t dua sampel independen untuk mengukur perbedaan dalam dan antar kelompok. Hasil penelitian menunjukkan peningkatan yang signifikan pada kelompok eksperimen dengan skor N-gain sebesar 75,16%, dibandingkan dengan 56,95% pada kelompok kontrol. Analisis statistik menunjukkan perbedaan signifikan antara kedua kelompok (Sig. = 0,000), menyoroti efektivitas media digital interaktif dibandingkan metode tradisional. Temuan ini menegaskan potensi WordWall sangat transformatif dalam menciptakan pengalaman belajar dinamis dan menarik. Namun demikian, akses terhadap teknologi dan perlunya penelitian lebih lanjut di berbagai konteks pendidikan tetap menjadi hal penting yang perlu diperhatikan.

**Kata kunci:** WordWall media, Penguasaan kosakata, Pembelajaran bahasa

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## INTRODUCTION

Traditional methods of vocabulary teaching, such as rote memorization, grammar translation, and teacher-led instruction, have long been central in language education. These methods emphasize systematic vocabulary learning through repetition, vocabulary lists, and focused grammatical contexts, laying a strong foundation for learners to develop linguistic competence. However, their effectiveness has some shortcomings that warrant critical examination, such as limited practical application, over-reliance on passive learning, minimal learner autonomy, cultural and contextual inflexibility, and modern pedagogical insight neglect. With the advent of technology-enhanced and interactive learning tools, traditional methods appear outdated. Studies have found that computer-assisted vocabulary learning, including interactive software and multimedia integration, is better at keeping students interested, helping them remember learning materials, and allowing them to use the learned materials in real life (Kiliçkaya & Krajka, 2010). While traditional vocabulary teaching methods provide a structured and disciplined approach to language acquisition, their limitations highlight the need for hybrid models. By integrating traditional rigor with modern, communicative, and interactive techniques, educators can address the drawbacks and better prepare learners for both academic and real-world language use.

Mastering English vocabulary is fundamental to effective communication and comprehension, serving as the backbone for developing the four core language skills listening, speaking, reading, and writing. Vocabulary forms the foundation of phrases, clauses, and sentences, enabling learners to construct questions and express ideas clearly. It is essential for interpreting meanings, understanding context, and engaging in conversations and texts (Yudha & Mandasari, 2021). Vocabulary is the basic building block of any language. Liando et al. (2022) noted that grammar provides structure, while vocabulary conveys content. Learners with a diverse vocabulary can better express their ideas, participate in discussions, and navigate social and academic settings more effectively. Those studies highlight that even with limited grammar knowledge, a strong vocabulary foundation facilitates communication, enabling learners to convey ideas, emotions, and thoughts fluently and meaningfully.

A robust vocabulary is also critical for reading and writing. It facilitates learners in deciphering text, making inferences, and writing clear and coherent sentences (Van Vu & Peters, 2021). Conversely, limited vocabulary makes it challenging to understand or create nuanced content. Furthermore, a broad vocabulary enhances cognitive processing by facilitating faster word retrieval, a factor associated with both academic success and intellectual opportunities. However, mastering vocabulary is not without challenges. Limited exposure, instructional focus, and ineffective learning strategies often hinder learners. Addressing these challenges requires innovative approaches such as engaging and contextually relevant media, including games or visual aids, which can enhance vocabulary retention and interest in language learning (Jambari et al., 2021). Technology integration, such as digital flashcards and language apps, also provides effective tools for fostering vocabulary acquisition.

In the current study, the seventh graders of MTS Al-Isro' Batealit Jepara encountered challenges in mastering English vocabulary, particularly terms related to "home" and "house." This issue is evident from the students' average score of 65 on daily vocabulary tests, which indicates a low level of proficiency. The students' boredom during lessons further compounds this lack of interest, as traditional methods fail to capture their attention or foster active participation. Digital tools, gamification, and interactive media have transformed and now makes education more engaging, personalized, and effective. Today's educational platforms and apps adapt to individual learning needs, allowing students to move at their pace and revisit difficult topics as needed (Ramaila & Molwele,

2022). Platforms such as Kahoot and Socrative enhance learning by offering instant feedback, promoting and encouraging learning autonomy.

Interactivity plays a crucial role in maintaining student interest. Technologies such as projectors, digital whiteboards, and augmented reality create immersive learning environments, helping students grasp complex concepts through hands-on simulations and visual exploration (Prensky, 2014). WordWall is a digital educational tool that facilitates the creation of interactive learning activities. WordWall offers templates for quizzes, games, and other tasks that are accessible on computers, tablets, or smartphones. Supporting both online and offline learning, WordWall proves to be a versatile platform adaptable to various educational settings. WordWall offers a range of features to enhance teaching and learning experiences. It provides a variety of templates for activities, including game formats like Random Wheel, True or False, Anagram, Word Search, and Matching Pairs, among others (Shelvia Amanda et al., 2024). These interactive elements enable a game-like approach to quizzes and assessments while allowing educators to customize content to fit their lessons.

Studies have consistently demonstrated the effectiveness of WordWall as an educational tool across various subjects and levels. In social studies classes at SMP N 4 Bae Kudus, WordWall was shown to significantly enhance student activeness and creative thinking (Amaliyah et al., 2025). Its implementation followed a structured approach with three stages: opening, core, and closing. Supporting factors such as simple access, enthusiastic students, and adequate resources contributed to its success, though challenges like technical issues, limited time, and student behavior were noted.

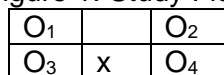
In Indonesian language classes at SMP Negeri 1 Slogohimo, the use of WordWall significantly improved learning outcomes (Anindyawati, 2024). Pretest and posttest comparisons highlighted better student engagement and comprehension, demonstrating the value of interactive digital tools in addressing learning monotony. Similarly, in Informatics classes at SMK Negeri 6 Bandung, WordWall, integrated within a blended learning framework, led to a 46.67% improvement in critical thinking scores (Ayustyaningtias et al., 2024).

The study on WordWall media highlights several key gaps that warrant further exploration. One notable limitation is the lack of generalizability, as most studies focus on specific schools, subjects, or grade levels. This narrow scope limits the broader applicability of findings and overlooks multi-institutional comparisons. This study focused exclusively on the use of WordWall quizzes as a newly applied media in comparison to conventional teaching methods. The studiers expect the findings of this study to provide valuable insights for teachers who aim to enhance their students' mastery of English vocabulary. Specifically, the study highlights the potential of attractive and interactive media to combat students' boredom and foster greater interest in learning.

## METHOD

This quantitative research used a quasi-experimental design of the non-equivalent control group type. Researchers conducted the study over two months, from September to October 2024, at MTS Al-Isro' Batealit Jepara. The study involved two groups: an experimental group that received treatment through the use of interactive quiz media WordWall and a control group that followed conventional teaching methods. Although the groups came from different classes and were not randomly selected, they shared relatively similar academic characteristics based on initial observations and average English scores. This design enabled the researchers to evaluate the effectiveness of the new media compared to traditional methods (Bonate, 2000).

Figure 1. Study Flow



The figure illustrates the study model, including two groups drawn from separate classes: the control group used conventional media, while the experimental group used WordWall media. The sample consisted of 40 seventh-grade students from Class A and another 40 from Class B at MTS Al-Isro' Batealit Jepara. In this study, Class A served as the control group, and Class B served as the experimental group.

Researchers collected data through tests, observations, and documentation. They used pretest and posttest questions as the primary instruments to assess students' vocabulary mastery before and after the intervention. These questions underwent validity and reliability testing, which confirmed that all items were valid and consistent. Additionally, observation sheets documented classroom activities and student engagement throughout the learning process, while documentation provided supporting visual and administrative records.

Researchers analyzed the data using both descriptive and inferential statistical methods. They began with normality and homogeneity tests to confirm that the data met the assumptions for parametric analysis. Then, they applied a paired sample t-test to identify changes in each group's scores before and after the treatment. An independent sample t-test measured the difference in learning outcomes between the experimental and control groups. All statistical analyses were conducted using SPSS version 26.

### RESULTS AND DISCUSSION

At the beginning of the study, the study prepared the pretest-posttest question items. Then, the study involved 30 pilot-study participants to work on the questions for item validity test purposes. Table 4 shows the validity test results for the pretest-posttest items.

Table 1. The Validity Results

	Valid	Invalid	Cronbach Alpha	Pearson Correlation (R-Value)	Sig (2-tailed)
Pretest	40	0	1	1.000	0.000
Posttest	40	0	1	1.000	0.000

Table 1 shows the results from the validity test indicate that all items in both the pretest and posttest are valid. The Cronbach Alpha scores for both question sets are 1. The scores indicate high reliability of the question item instruments.

After ensuring the pretest-posttest question items were valid, the researchers used the questions to collect the data for both groups. Here are the normality test results of both groups after they answered the questions.

Table 2. The Pretest Normality Test

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest Control	.116	40	.190	.960	40	.162
Pretest Experiment	.129	40	.092	.953	40	.093

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The normality test results for both the control and experimental groups were analyzed using the Kolmogorov-Smirnov (K-S) test and the Shapiro-Wilk test. The

significance values (p-values) obtained from both tests were used to determine whether the data followed a normal distribution, with a threshold of  $p > 0.05$  indicating normality.

For the control group, the pretest scores had a Kolmogorov-Smirnov significance of 0.190 and a Shapiro-Wilk significance of 0.162, both exceeding the 0.05 threshold, confirming that the data is normally distributed. In the experimental group, the pretest scores recorded a Kolmogorov-Smirnov significance of 0.092 and a Shapiro-Wilk significance of 0.093, both above 0.05, indicating a normal distribution. The following table shows the pretest results.

Table 3. Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Hasil Pretest	Based on Mean	.065	1	78	.799
	Based on Median	.143	1	78	.706
	Based on Median and with adjusted df	.143	1	74.570	.706
	Based on trimmed mean	.065	1	78	.799

The table shows all significances are higher than 0.05. These results suggest the obtained data from both groups during the pretest were homogeneous. The researchers also conducted the same procedure for the posttest results of both groups. Table 4 shows the results.

Table 4. Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Hasil Posttest	Based on Mean	1.377	1	78	.244
	Based on Median	1.377	1	78	.244
	Based on Median and with adjusted df	1.377	1	74.009	.244
	Based on trimmed mean	1.408	1	78	.239

Table 4 also shows similar results with table 3. The post-test results from both groups have significances higher than 0.05. Thus, the data are homogeneous.

Based on the homogeneity tests, all obtained data are homogenous. Therefore, the next step would be conducting paired t-test. However, in this research, the researchers provide the real score results of both groups' pretest and post-test before the paired t-test section.

Table 5. The Pretest-Posttest of Control Group

Intervals	Labels	Frequency			
		Pretest	(%)	Posttest	%
90 – 100	Excellent	0	0	0	0
80 – 89	Very high	0	0	0	0
70 – 79	High	1	2.5	6	15
60 – 69	Moderate	22	55	28	70
50 – 59	Low	17	42.5	6	15
Less than 49	Very low	0	0	0	0

The data from the control group's pretest and posttest scores reveal a limited shift in student performance. Before the intervention, the majority of students (55%) fell into

the "Moderate" category (60–69), with 42.5% scoring in the "Low" category (50–59). Only 2.5% of students achieved a "High" score (70–79), and no students reached the "Very High" (80–89) or "Excellent" (90–100) levels. There were also no students in the "Very Low" category (below 49).

After the intervention, some improvements were observed. The percentage of students scoring in the "Moderate" range increased to 70%, while those in the "Low" category decreased significantly to 15%. Additionally, 15% of students achieved a "High" score, a noticeable increase from the pretest results. However, despite this upward trend, no students reached the "Very High" or "Excellent" levels in the posttest, and no students fell into the "Very Low" category either. Overall, while the control group exhibited some positive progress, the gains remained moderate and largely within the mid-range score brackets.

The paired sample test of this control group pretest-posttest scores also found a slight improvement. Table 6 shows the paired sample test.

Table 6. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest Control	59.8355	40	4.90250	.77515
	Posttest Control	65.0340	40	5.40142	.85404

The table shows the increased mean scores from 59.83 into 65.03. After displaying the real scores of the control group, the following table shows the pretest-posttest scores of the experimental group.

Table 7. The Pretest-Posttest of Experimental Group

Intervals	Labels	Frequency			
		Pretest	(%)	Posttest	%
90 – 100	Excellent	0	0	1	2.5
80 – 89	Very high	0	0	1	2.5
70 – 79	High	3	7.5	19	47.5
60 – 69	Moderate	22	55	17	42.5
50 – 59	Low	14	35	2	5
Less than 49	Very low	1	2.5	0	0

The performance data for the experimental group shows a more pronounced improvement following the intervention. Initially, in the pretest, most students (55%) scored in the "Moderate" category (60–69), while 35% were in the "Low" category (50–59). A small number, 7.5%, achieved a "High" score (70–79), and only 2.5% fell into the "Very Low" category (below 49). No students reached the "Very High" or "Excellent" levels in the pretest.

Post-test results, however, show a substantial shift. Nearly half of the students (47.5%) scored in the "High" category, a dramatic increase from the pretest. Additionally, some students reached the top performance levels, with 2.5% scoring in both the "Very High" and "Excellent" categories—levels not attained during the pretest. The percentage of students in the "Moderate" category decreased slightly to 42.5%, and only 5% remained in the "Low" range. Notably, no students scored in the "Very Low" category after the intervention.

This data suggests that the experimental group experienced significant academic improvement, not only moving students out of the lower performance categories but also

enabling some to achieve high and exceptional levels of performance. The following table, table 8, also asserts the improvement.

Table 8. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest Experiment	60.9468	40	5.71752	.90402
	Posttest Experiment	70.6200	40	6.71039	1.06101

Table 8 shows the increased mean scores from 60.94 into 70.62. The increased difference is higher than the control group. Table 9 highlights the results.

Table 9. The highlight of Both Group's Pretest-Posttest Scores

Pairs		Mean
Pair 1	Pretest Control	59.8355
	Posttest Control	65.0340
Pair 2	Pretest Experiment	60.9468
	Posttest Experiment	70.6200

Based on the results, experiment group has the highest improvement. This result is supported by the following paired sample t-test.

Table 10. The Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. S	Std. Error Mean	95%				
					Lower	Upper			
Pair 1	Pretest Control - Posttest Control	-5.1985	2.73657	.43269	-6.07370	-4.32330	-12.014	39	.000
Pair 2	Pretest Experiment - Posttest Experiment	-9.67325	3.26730	.51661	-10.71818	-8.62832	-18.725	39	.000

The paired samples t-test was conducted to compare the pretest and posttest scores within both the control and experimental groups. The results indicate a statistically significant improvement in scores after the intervention, as reflected in the p-values (0.000) for both groups. For the control group, the mean difference between the pretest and posttest scores was -5.19850, with a t-value of -12.014 and a 95% confidence interval ranging from -6.07370 to -4.32330. The p-value (0.000) is less than 0.05, confirming that the increase in scores is statistically significant. This suggests that even without the experimental intervention, the control group showed improvement, likely due to standard classroom instruction. However, the magnitude of improvement is moderate.

In contrast, the experimental group, which used an intervention method such as WordWall Media, exhibited a larger mean difference of -9.67325, with a t-value of -18.725 and a 95% confidence interval ranging from -10.71818 to -8.62832. The p-value (0.000) once again indicates a highly significant difference between the pretest and posttest scores. Notably, the experimental group's improvement was much greater than that of the control group, suggesting that the new intervention was considerably more effective in enhancing vocabulary mastery. This result is also supported by the result of independent sample t-test. Table 11 shows the results.

Table 11. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Learning outcomes Control vs Experiment	Equal variances assumed	1.377	.244	-4.101	78	.000
	Equal variances not assumed			-4.101	74.595	.000

In conclusion, both groups demonstrated significant progress, as indicated by the p-values ( $p < 0.001$ ), confirming that the observed improvements were not due to chance. However, the experimental group outperformed the control group, supporting the conclusion that the intervention led to a more substantial vocabulary improvement compared to traditional teaching methods. Table 11 shows the Sig (2-tailed) is 0.000. This score suggest a significant difference between the learning outcomes of control and experimental group. The results of this study highlight the significant impact of WordWall media on students' vocabulary mastery compared to conventional teaching methods. Below are key points for the discussion.

#### ***Effectiveness of WordWall Media***

The experimental group, which received the intervention (such as WordWall Media), showed a significant improvement in vocabulary mastery between the pretest and posttest. The mean difference between the two tests was -9.67325, indicating that students scored significantly higher after the intervention. The standard deviation was 3.26730, and the standard error mean was 0.51661, suggesting a relatively consistent improvement across participants. The t-value of -18.725 indicates a strong effect, and the 95% confidence interval (-10.71818 to -8.62832) confirms that the true mean difference is unlikely to be less than -10.72 or greater than -8.63. Most importantly, the p-value (0.000) is well below the 0.05 significance threshold, confirming that this improvement is statistically significant and not due to chance.

The larger mean difference compared to the control group (-9.67 vs. -5.19) suggests that the experimental intervention had a significantly stronger impact on student learning. This indicates that the use of interactive learning tools, such as WordWall, was more effective in enhancing vocabulary acquisition than traditional teaching methods. The results provide strong evidence that incorporating engaging and interactive media in language learning can significantly boost students' vocabulary mastery. Another interpretation to discuss is – the result from experimental group demonstrates that the interactive and gamified elements of WordWall fostered better engagement, retention, and application of vocabulary skills. Anindyajati & Choiri (2017) and Triariani (2020) also found the benefits of gamification and technology in education with WordWall media.

#### ***Comparison with Conventional Media***

The comparison between traditional teaching methods and the WordWall quiz intervention reveals significant differences in their effectiveness based on the paired samples t-test results. The mean difference in pretest and posttest scores for the control group (traditional teaching) was -5.19850, indicating a moderate improvement in vocabulary mastery. In contrast, the experimental group (WordWall quiz) showed a larger mean difference of -9.67325, nearly twice as high as the control group, suggesting that students exposed to interactive quizzes experienced greater vocabulary gains.



The statistical strength of improvement, as indicated by the t-values, further highlights the advantage of the WordWall quiz. The traditional teaching group had a t-value of -12.014, confirming a significant improvement, but the WordWall group achieved a much higher t-value of -18.725, demonstrating a stronger and more impactful effect on vocabulary learning. In terms of statistical significance, both methods showed p-values of 0.000, meaning that the observed improvements in vocabulary scores were highly significant and not due to chance. However, the larger mean difference and stronger t-value in the WordWall quiz group suggest a more effective learning experience compared to traditional methods. The findings indicate that students who learned through interactive and gamified tools like WordWall showed greater engagement and retention, leading to a more substantial vocabulary improvement.

This reinforces the conclusion that WordWall is not only effective but also superior in enhancing vocabulary mastery among students (Güngör Deveci, 2024). Marensi et al. (2023) also found the same result. The combination of interactive learning, engagement, and digital reinforcement contributed to a superior learning outcome (Capone & Lepore, 2022; Wang et al., 2022). These results highlight the importance of integrating digital tools into language education, as they can enhance student motivation, participation, and overall achievement more effectively than conventional teaching approaches. The findings suggest that incorporating interactive and gamified digital tools such as WordWall can enhance language learning outcomes. Teachers should consider integrating such media into their lesson plans to foster a more engaging and effective learning environment (Yeh, 2025). However, it is essential to address potential barriers such as limited technological access and ensure equitable implementation.

### ***Challenges and limitations***

While WordWall proved effective, its reliance on technology poses challenges in resource-limited settings. Furthermore, the study's focus on a single sample group and specific vocabulary topics may limit the generalizability of its findings. Future study could explore long-term effects, cross-subject applications, and strategies for integrating WordWall in diverse educational contexts. Finally, the study confirmed that the WordWall media approach was significantly more efficient than conventional teaching methods (Nurammida et al., 2024; Umairah & Agustina, 2023). The independent sample t-test results, with a Sig (2-tailed) value of 0.000, indicated a statistically significant difference in effectiveness between the two groups. The experimental group outperformed the control group, showcasing the superior efficiency of WordWall. There was better vocabulary mastery because WordWall made learning vocabulary more fun, interactive, and relevant to the student's situation (Reviana et al., 2024). This made WordWall a more useful tool for teaching vocabulary (Moorhouse & Kohnke, 2024).

## **CONCLUSION**

The study underscores the transformative potential of digital tools such as WordWall in improving vocabulary mastery. By leveraging technology's interactive features, educators can create more dynamic and impactful learning experiences that effectively address the limitations of conventional methods. While conventional teaching methods have a limited but measurable impact on vocabulary mastery, the study demonstrated that WordWall quizzes significantly enhance vocabulary acquisition through interactive and engaging approaches. Also, WordWall media worked better and faster than old ways of doing things, which supports its use as a better tool for improving language learning outcomes and creating a more interesting and useful learning environment.

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