FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

THE EFFECTS OF A GAME-BASED WEB APPLICATION ON EFL STUDENTS' VOCABULARY MASTERY: A QUASI-EXPERIMENTAL STUDY

Rahadatul Aisy[1*], Dzakiah Dzakiah[2], Rasmi Rasmi[3]
[1,2,3] English Education, Datokarama State Islamic University Palu, Sulawesi Tengah, Indonesia

aisaais294@gmail.com

ABSTRACT

Vocabulary mastery is essential for learning English as it supports the development of the four language skills. However, many Indonesian students face difficulties due to uninteresting instruction and low motivation. This study aimed to examine the effect of a game-based web application (Wordwall) on the vocabulary mastery of EFL students. A quantitative quasi-experimental design was employed involving two classes consisting of 32 students each. The experimental group was taught using Wordwall, while the control group received conventional instruction. Vocabulary mastery was measured through pre-test and post-test instruments. The findings revealed that the experimental group showed significantly greater improvement than the control group, with mean post-test scores of 74.37 and 59.38, respectively. Statistical analysis confirmed that there was a significant effect of using Wordwall on students' vocabulary mastery ($t = 14.883$, $p < 0.05$). Furthermore, the effect size analysis using Cohen's d indicated a large effect ($d = 0.86$). These findings demonstrate that the use of Wordwall as a game-based web application has a significant effect on EFL students' vocabulary mastery at the junior high school level.

Keywords: EFL Teaching, Vocabulary Mastery, Wordwall Web-Based Application

INTRODUCTION

Vocabulary mastery is a fundamental component of English as a Foreign Language (EFL) learning because it underpins effective communication and overall language development (Manihuruk, 2020). Adequate vocabulary knowledge enables learners to comprehend spoken and written texts, express ideas accurately, and develop the four core language skills listening, speaking, reading, and writing (Schmitt & Schmitt, 2020). Conversely, learners with limited vocabulary often experience difficulties in processing language input and producing meaningful output, which may hinder their academic achievement in English (Masrai et al., 2021). Recent international studies further emphasize that vocabulary mastery is closely related to learners' cognitive engagement and self-regulated learning processes, which play a crucial role in successful EFL development (Teng et al., 2024). Taken together, these studies highlight that vocabulary mastery is not merely a supporting element but a core foundation for successful EFL learning.

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

Despite its central role, vocabulary learning remains a persistent challenge for Indonesian junior high school students. At this level, learners are expected not only to memorize lexical items but also to understand and apply them appropriately in context. However, vocabulary instruction in many classrooms still relies heavily on conventional practices such as textbook-based learning, translation, and rote memorization. These approaches often result in monotonous learning experiences that provide limited opportunities for meaningful interaction and repeated contextualized practice, leading to low learner motivation and weak vocabulary retention (Rahmawati & Dahlina, 2024). Similar conditions were observed at SMPN 1 Palu, where eighth-grade students demonstrated limited vocabulary mastery and low engagement during English lessons, particularly in vocabulary learning.

In response to these challenges, the integration of Information and Communication Technology (ICT) has become increasingly important in 21st-century language education. Technology-enhanced learning environments are widely reported to support learner engagement and learning outcomes through multimodal input, immediate feedback, and opportunities for repeated exposure to learning materials (Agustina et al., 2024; Dou et al., 2025; Godwin-Jones, 2022). From a cognitive perspective, technology-assisted vocabulary learning facilitates deeper lexical processing and supports long-term retention by allowing learners to interact with vocabulary items in meaningful and varied contexts (Hao et al., 2021; Wang et al., 2025). These findings suggest that technology can address key cognitive demands of vocabulary acquisition when pedagogically integrated.

One pedagogical approach that aligns closely with these technological affordances is game-based learning. Game-based learning integrates instructional content with game elements such as challenges, rewards, competition, and immediate feedback to enhance learner motivation and cognitive engagement (Y. Li et al., 2024; M. A. Putri et al., 2025). Grounded in constructivist learning theory, this approach emphasizes active knowledge construction through meaningful interaction. In vocabulary learning, game-based digital activities promote repeated practice, sustained attention, and learner involvement—factors that are essential for effective vocabulary acquisition. Empirical studies consistently demonstrate that students exposed to game-based digital vocabulary instruction achieve better learning outcomes and display higher levels of participation compared to those taught through conventional methods (Dwi Prastiwi & Lestari, 2025; Khasanah & Suminar, 2023a; Pradini & Adnyayanti, 2022). Collectively, these studies indicate that game-based learning supports both cognitive and motivational dimensions of vocabulary learning.

Closely related to game-based learning is Mobile-Assisted Language Learning (MALL), which emphasizes the use of mobile devices and web-based platforms to facilitate flexible and accessible language learning (Ayu et al., 2025; Katemba, 2025). MALL enables learners to access learning materials beyond classroom boundaries, promoting learner autonomy and frequent practice. Research suggests that sustained exposure and self-directed practice facilitated by MALL contribute positively to vocabulary development, particularly among secondary school learners who require continuous reinforcement of lexical knowledge (Augie et al., 2025; Boroughani, Xodabande, et al., 2023). Thus, MALL provides a

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

complementary framework that supports vocabulary acquisition through increased exposure and learner control.

One web-based application that integrates the principles of game-based learning and MALL is Wordwall. Wordwall allows teachers to design interactive and customizable activities such as matching games, quizzes, word searches, and maze chase, among other interactive game-based activities that provide immediate feedback and engaging learning experiences (Khasanah & Suminar, 2023b; S. P. Putri et al., 2025) (see figure 1). In vocabulary instruction, Wordwall supports contextualized learning by embedding target words in interactive and sentence-based tasks, thereby encouraging repeated practice and meaningful use of vocabulary (see figure 2). Conceptually, Wordwall can be viewed as a learning tool in which interactive game features enhance learners' motivation and engagement, which in turn promote frequent practice and deeper cognitive processing of vocabulary items, ultimately leading to improved vocabulary mastery.

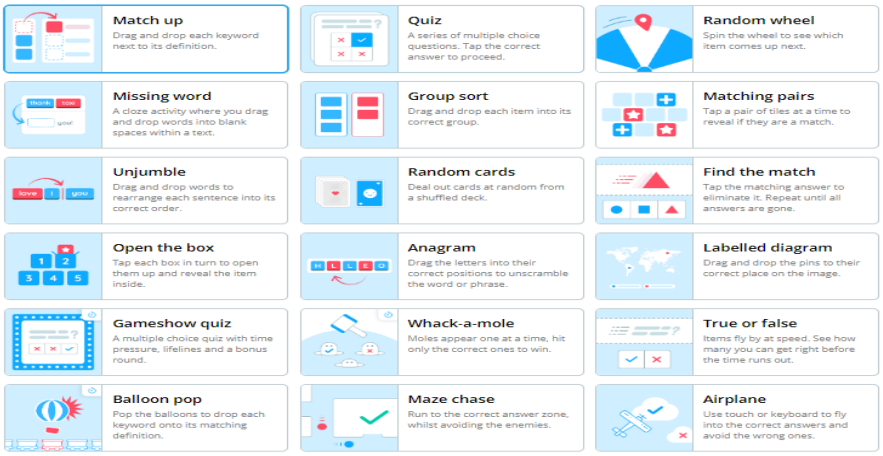

Figure 1. Examples of activity templates available in the Wordwall web-based application.

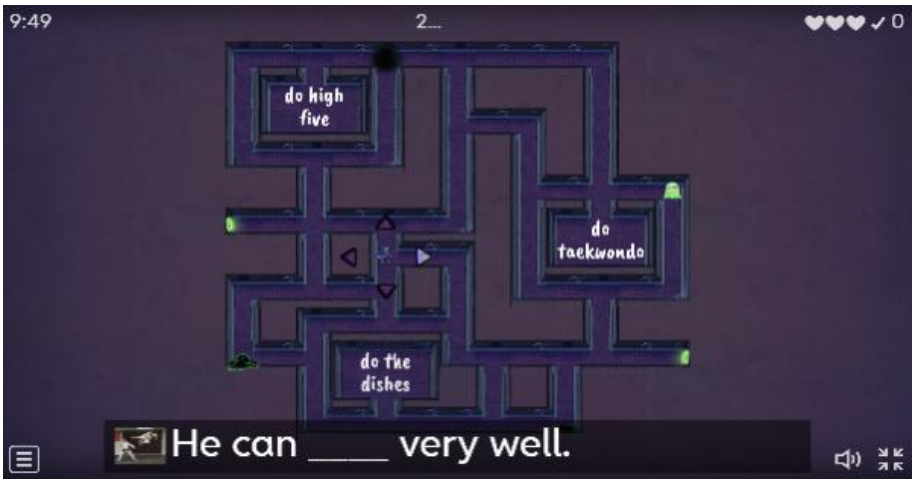

Figure 2. Illustrates an example of a game-based activity in the Wordwall application.

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

Previous empirical studies have reported positive effects of Wordwall on students' learning interest, engagement, and vocabulary achievement. Research indicates that Wordwall increases students' learning interest and classroom participation (Azzahra et al., 2025; Pramudita & Sunarso, 2024) and contributes to improved vocabulary mastery in EFL (Diah Anggreini et al., 2022; Hikmah et al., 2025). Other studies similarly report that Wordwall enhances classroom interaction and supports vocabulary learning outcomes (Amaliyah & Mastuti Rahayu, 2023; Musthafa & Anam, 2023). While these findings collectively support the pedagogical value of Wordwall, many previous studies have focused primarily on affective variables or employed classroom action research and qualitative designs, which limit the strength of causal inference.

Accordingly, a clear research gap remains. Quantitative studies employing rigorous quasi-experimental designs with control groups, particularly those focusing on eighth-grade students in public junior high schools within local contexts such as Palu City, are still limited. Moreover, few studies have explicitly examined Wordwall not only as a practical teaching tool but also as a theoretically grounded medium that supports vocabulary acquisition through cognitive, motivational, and engagement-based mechanisms.

Therefore, this study employs a quantitative quasi-experimental design to examine the effect of a game-based web application (Wordwall) on the vocabulary mastery of EFL students. Theoretically, this study contributes to vocabulary acquisition research by clarifying how game-based and mobile-assisted learning features support cognitive processing and learner engagement in vocabulary learning. Pedagogically, it provides empirical evidence for the effective integration of Wordwall in junior high school EFL contexts, particularly among eighth-grade students. This study is guided by the following research question: Is there a significant effect of a game-based web application (Wordwall) on EFL students' vocabulary mastery?

METHODS

Quantitative research refers to a systematic investigation that employs numerical data and statistical analysis to examine relationships between measurable variables (David Creswell, 2023). In language education research, quasi-experimental designs are considered appropriate because they allow researchers to evaluate the effects of instructional interventions in authentic classroom settings where random assignment is not feasible (Capili & Anastasi, 2024).

Accordingly, this study employed a quantitative approach using a quasi-experimental design to examine the effect of a game-based web application (Wordwall) on the vocabulary mastery of EFL students. This design was selected to determine whether there was a significant difference between the experimental group, which received instruction using the Wordwall application, and the control group, which was taught using conventional teaching methods. The quasi-experimental design was applied due to the intact nature of existing classroom groups, which made random assignment impractical.

The population consisted of all eighth-grade students at SMPN 1 Palu, totaling 352 students across eleven classes. Two intact classes were selected through purposive sampling based on comparable academic ability, similar learning characteristics, and practical

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

considerations related to accessibility and research feasibility. The class selection was conducted in consultation with the English teacher, who recommended classes suitable for the implementation of the treatment. Class VIII B was assigned as the experimental group and Class VIII A as the control group, with 32 students in each class. This sample size was considered adequate for parametric statistical analysis and reflects the typical classroom size commonly used in educational research.

The research was conducted over six meetings. The first meeting was used to administer the pre-test, followed by four treatment meetings, and the final meeting was used to administer the post-test. During the treatment sessions, both groups were taught the same vocabulary materials aligned with the school curriculum.

In the experimental group, Wordwall was used during the evaluation stage of each lesson. After the vocabulary material was explained, students completed practice and assessment activities through Wordwall-based games, which were accessed individually using their own mobile phones. In contrast, the control group received the same materials and evaluation activities using conventional paper-based exercises without digital game-based media.

During the evaluation stage of each treatment session, several Wordwall features were employed to assess and reinforce students' vocabulary mastery. These features included quizzes, maze chase, type the answer, complete the sentence, flying fruit, find the match, match up, and crossword activities. All activities were designed to practice the same target vocabulary and were aligned with the learning objectives of each lesson. The use of varied Wordwall features aimed to maintain students' engagement while promoting active recall, form–meaning connections, and repeated exposure to vocabulary items.

To ensure treatment fidelity and reduce internal validity threats, particularly the teacher effect, both groups were taught directly by the researcher using identical lesson plans, learning objectives, instructional materials, and time allocation. The only difference between the two groups was the instructional media used during the evaluation stage. To minimize the testing effect, the pre-test and post-test employed the same format with different but equivalent items, and the post-test was administered after all treatment sessions were completed.

Data were collected using a vocabulary test administered as a pre-test and a post-test. The test consisted of 20 items in the form of multiple-choice, translation, and matching questions designed based on the learning indicators and vocabulary materials specified in the school curriculum. The vocabulary test was validated through expert judgment by two English education experts to ensure content relevance and alignment with the research objectives. However, as the instrument was not pilot-tested on students outside the research sample, a reliability coefficient such as Cronbach's alpha could not be calculated; nevertheless, expert judgment ensured that the test items were appropriate for measuring eighth-grade students' vocabulary mastery.

The collected data were analyzed using SPSS version 31. Descriptive statistics were used to obtain the mean, minimum, maximum, and standard deviation scores. Normality and homogeneity tests were conducted as prerequisites for hypothesis testing. Paired-sample

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

and independent-sample t-tests were then applied at a significance level of 0.05 to determine the effect of the Wordwall web-based application on students' vocabulary mastery.

RESULTS

The results of this study present the effects of a game-based web application, Wordwall, on EFL students' vocabulary mastery at the eighth grade of SMPN 1 Palu. This study employed a quasi-experimental design involving two groups: an experimental group and a control group. The control group received vocabulary instruction through conventional teaching methods, while the experimental group was taught using the Wordwall game-based web application. This study involved two variables: the use of the game-based web application (Wordwall) as the independent variable and students' vocabulary mastery as the dependent variable. Data were collected through a vocabulary test consisting of 20 items administered to both groups. The following scoring factors are used to calculate students' scores:

Table 1. Classification of the students' scores

Classification	Score
Very Good	85-100
Good	65-84
Fair	55-64
Poor	35-54
Very Poor	0-34

A pre-established scoring formula was used to determine the students' pre-test and post-test results, as explained below:

Table 2. Descriptive statistics of pre-test and post-test

Class	Test	Mean	Minimum	Maximum	Std. deviation	Gain Score
Control	Pre-test	45.47	10	70	16.913	-
Control	Post-test	59.38	30	85	15.013	13.91
Experiment	Pre-test	44.69	10	70	16.941	-
Experiment	Post-test	74.37	35	100	19. 582	29.68

Descriptive statistics function to display and condense the collected data. Their main purpose is to describe the features of the research sample. Referring to the table, the mean score of the experimental group demonstrated a considerable increase, rising from a poor level (44.69) to a good level (74.37) after the treatment. On the other hand, the control group experienced only a modest improvement, increasing from a poor level (45.47) to a fair level (59.38). The experimental group showed a gain of 29.68 points, while the control group improved by only 13.91 points. The difference between the two groups' post-test means reached 14.99 points. Additionally, effect sizes were calculated for clarity. Cohen's d value was 0.86, indicating a large effect, suggesting that the Wordwall web-based application can

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

effectively improve students' vocabulary mastery compared to conventional teaching methods.

Following the descriptive analysis, the researcher conducted the normality test. This test is used to determine whether the data follows a normal distribution or not. Because the study included a total sample of 64 students, the normality test was performed using the Kolmogorov-Smirnov method at a significance level of 0.05. The data of the normality test was displayed in the following table:

Table 3. Test of normality

	Kolmogorov Smirnov Class	Statistic	Df	Sig.
Result	Pre-test (control)	.137	32	.134
	Post-test (control)	.146	32	.081
	Pre-test (experiment)	.120	32	.200*
	Post-test (experiment)	.144	32	.088

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

The table of normality test results using the Kolmogorov-Smirnov method demonstrates that all data is regularly distributed. The significance value (Sig.) for each of the four data groups shows that they are all above the significance level of α = 0.05.

The pre-test significance value for the control group is 0.134, and the post-test is 0.081, both of which are greater than 0.05. Meanwhile, in the experimental group, the pre-test significance value reached 0.200, while the post-test value was 0.088. Thus, the four data groups meet the normality assumption because all significance values are greater than the critical limit of 0.05.

To ensure the data's credibility, a homogeneity test was performed to evaluate whether the variances were consistent across groups. The analysis was carried out using SPSS. The decision-making criteria in the homogeneity test were: if the significance value > 0.05, then the variance of two or more sets of population data can be declared to be homogeneous (Pallant, 2020), and the results are presented in the table:

Table 4. Homogeneity test

	Class	Levene Statistic	Df 1	Df2.	Sig.
Result	Based on Mean	.356	1	62	.072
	Based on Median	.067	1	62	.156
	Based on Median and with adjusted df	.067	1	56.289	.156
	Based on trimmed mean	.094	1	62	.084

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

With reference to the data, a statistically significant result is shown by the substantial value based on a mean of 0.072, which is higher than the predefined significance level of 0.05. It suggests that the data have a homogenous variance.

The Independent Sample t-test is then used to ascertain whether there is a significant difference between the experimental and control groups based on the findings of the normality and homogeneity tests, which demonstrate that the data is normally distributed and has a homogeneous variance. The results are shown in the following table:

Table 5. Independent sample t-test

		Levene's Test for Equality of Variances				
		F	Sig.	T	Df	Sig. (2-tailed)
Result	Equal variances assumed	.356	.072	3.439	62	.001
	Equal variances not assumed			3.439	58.085	.001

Levene's Test for Equality of Variances has a significance value of 0.072 > 0.05. As a result, the independent sample t-test analysis was carried out under the assumption that the two groups' variances were equivalent. The t-test result revealed a significance value (2-tailed) of 0.000 < 0.05, indicating a statistically significant difference between the results of the control class taught using a conventional method and the experimental class taught utilizing the Wordwall web-based application.

A Paired Sample T-test was performed to ascertain whether there was a significant difference between the pre-test and post-test results in the experimental class following the acquisition of the Independent Sample t-test findings comparing two distinct groups. The following table displays the Paired Sample T-test result:

Table 6. Paired sample t-test

	Paired Differences							
	Mean	Std. Dev	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pretest-Posttest	29.688	11.284	1.995	33.756	25.619	14.883	31	.001

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

The results of the paired-samples t-test revealed a significant difference between pre-test and post-test scores ($t = 14.883$, $p = 0.001$). Since the obtained t-value exceeded the critical value ($t = 2.040$, $df = 31$, $\alpha = 0.05$), the null hypothesis was rejected, indicating a significant effect of the Wordwall web-based application on students' vocabulary mastery. This finding is further supported by a large effect size (Cohen's $d = 0.86$), suggesting that Wordwall is effective in improving the vocabulary mastery of eighth-grade students at SMPN 1 Palu.

DISCUSSION

The results of this study indicate that the use of the Wordwall web-based application has a significant positive effect on the vocabulary mastery of eighth-grade students at SMPN 1 Palu. Rather than emphasizing numerical gains alone, the key finding of this study lies in how Wordwall facilitates effective vocabulary learning processes. The higher improvement achieved by the experimental group suggests that Wordwall provides learning conditions that are more supportive of vocabulary acquisition than conventional teaching methods.

From a cognitive perspective, the effectiveness of Wordwall can be explained through its emphasis on repeated exposure and active engagement with vocabulary items. Wordwall activities allow students to repeatedly encounter, practice, and apply new words in varied and interactive formats. According to (Schmitt & Schmitt, 2020) Vocabulary acquisition is strengthened through repeated exposure, deep processing of word form and meaning, and active learner involvement. These principles are also consistent with findings from mobile-assisted vocabulary learning research, which highlights repetition, immediate feedback, and learner interaction as key mechanisms supporting vocabulary development (Okumuş Dağdeler, 2023). Thus, Wordwall supports vocabulary mastery by creating opportunities for sustained cognitive processing rather than passive memorization. This explanation is in line with international research on educational games for EFL vocabulary learning, which reports that repeated interaction with lexical items in game-based environments facilitates deeper cognitive processing and vocabulary retention (Tonda et al., 2026).

The effectiveness of Wordwall can also be interpreted from a multimodal learning perspective. (Mayer, 2021) states that learning is more effective when information is presented through both verbal and visual channels, as this reduces cognitive load and enhances attention. In addition to visual and textual elements, Wordwall also provides audio support that allows students to listen to the pronunciation of vocabulary items while playing the games, thereby strengthening the connection between form, meaning, and sound. Wordwall integrates text, images, symbols, and game-based interfaces, which likely helped students process vocabulary more efficiently. This interpretation aligns with empirical studies showing that multimedia-based digital learning environments enhance learners' cognitive engagement and vocabulary understanding (Mahardika & Sukardi, 2024; Tiara et al., 2024). Therefore, Wordwall's multimodal features play an important role in supporting vocabulary learning at the junior high school level, a finding that is consistent with international studies showing that multimodal digital learning tools enhance learners' engagement and comprehension through visual, textual, auditory, and interactive elements (X. Li & Matar Hasan Alharbi, 2025).

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

In addition to cognitive and multimodal factors, learners' engagement and motivation may also have contributed to the effectiveness of Wordwall. Although motivation was not directly measured in this study, the greatest improvement shown by the experimental group suggested higher learners' engagement and sustained motivation during the learning process. Previous studies have reported that Wordwall-based activities increase students' interest and engagement through interactive and game-based features (Azzahra et al., 2025; Pramudita & Sunarso, 2024), while digital vocabulary learning tools also support self-regulated learning by allowing learners to control pacing, repetition, and practice frequency, which further enhances vocabulary development (Boroughani, Behshad, et al., 2023). These findings are consistent with international research indicating that educational games foster learners' motivation and engagement, which indirectly support vocabulary development when learners are actively involved in the learning process (Alfares, 2025).

Statistical analysis further confirms that the observed improvement was not the result of chance, as indicated by a significant difference between pre-test and post-test scores ($t = 14.883$, $p = 0.001$). According to (Pallant, 2020) A large t-value reflects a strong instructional impact, suggesting that the improvement in vocabulary mastery resulted from the systematic integration of Wordwall into instruction rather than random variation.

The findings of this study are generally consistent with previous research on Wordwall and mobile-assisted vocabulary learning. Studies by (Diah Anggreini et al., 2022) and (Hikmah et al., 2025) Similarly, Wordwall was found to improve students' vocabulary mastery, supporting the effectiveness of interactive digital learning activities. In broader mobile-assisted learning contexts, interactive digital tools have also been shown to enhance vocabulary achievement and learner engagement significantly (Jedi-Sari-Biglar & Liman-Kaban, 2023). However, some studies caution that digital tools may have limited effects when teachers do not support their use with clear instructional objectives and appropriate guidance. This suggests that Wordwall is most effective when it is pedagogically integrated rather than used as a stand-alone activity. This caution is echoed in international research emphasizing that the effectiveness of digital and game-based learning tools depends on purposeful instructional design and teacher facilitation (Al-Rashidi, 2025).

The results of this study indicate that the use of Wordwall has a positive effect on improving the vocabulary mastery of eighth-grade junior high school students. This finding can be understood through the alignment between the developmental characteristics of eighth-grade students and the instructional approach applied in this study. At the stage of early adolescence, students possess sufficient cognitive readiness to process new vocabulary; however, they still require emotional support and engaging learning activities to maintain student engagement. Wordwall provides repeated vocabulary exposure, visual support, and game-based activities that create a low-anxiety learning environment, thereby facilitating more effective vocabulary acquisition (Erlam et al., 2021).

The learning context of public junior high schools in Palu City also influenced the successful implementation of Wordwall in this study. As a developing urban area with increasing access to digital learning technologies, the use of interactive learning media in classrooms remains relatively limited. Within this context, Wordwall functions as an engaging and motivating learning medium that encourages active student participation. This

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

increased engagement aligns with the view that learning environments offering meaningful activities and valuing student participation can enhance active involvement in the learning process (Verhoeven et al., 2021). From a methodological perspective, the use of a quasi-experimental design allows this study to demonstrate the effect of Wordwall on vocabulary improvement more clearly in an authentic classroom setting. Through a comparison between the experimental and control groups, the findings show that the improvement in students' vocabulary mastery is directly associated with the implementation of Wordwall as a learning medium. Therefore, this study provides strong empirical evidence that Wordwall is effective in improving vocabulary mastery among eighth-grade junior high school students.

Despite these positive findings, several limitations should be acknowledged. This study was conducted over a relatively short period and focused on short-term improvements in vocabulary mastery. Vocabulary acquisition is a long-term process that requires sustained exposure and repeated use across different contexts (Nation, 2022). Therefore, future studies are recommended to examine long-term vocabulary retention and to integrate qualitative data, such as interviews or classroom observations, to complement quantitative findings and provide deeper insights into students' learning experiences in Wordwall-based instruction.

Overall, this discussion demonstrates that the Wordwall web-based application is effective in enhancing vocabulary mastery, as evidenced by substantial improvements in mean scores, gain scores, and statistically significant t-test results. By supporting active and meaningful vocabulary learning processes, Wordwall proves to be a pedagogically effective digital learning medium in EFL classrooms. The findings of this study strengthen the existing literature on technology-enhanced vocabulary learning and highlight the potential of game-based digital learning media in junior high school contexts.

CONCLUSION

This study concludes that the Wordwall web-based application has a significant effect on improving the vocabulary mastery of eighth-grade students in English as a Foreign Language (EFL) learning. Students who learned vocabulary through Wordwall demonstrated significantly better outcomes than those taught using conventional instructional methods.

Theoretically, the findings support vocabulary acquisition theories that emphasize the importance of repeated exposure, active engagement, and multimodal input in vocabulary learning. Pedagogically, Wordwall can be utilized as an effective instructional medium to enhance student engagement and participation in junior high school vocabulary instruction.

However, this study has limitations, particularly the short duration of the intervention and the limited sample size. Therefore, future research is recommended to examine long-term vocabulary retention and to involve larger samples or integrate quantitative and qualitative data to gain deeper insights into digital media–based vocabulary learning.

ACKNOWLEDGMENT

The author would like to express sincere gratitude to the English Education Study Program for the support and facilitation provided throughout the research process. Appreciation is also extended to the principal, English teachers, and eighth-grade students of SMPN 1 Palu for their cooperation and participation in this research. The author also

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

expresses gratitude to the two supervisors for their valuable guidance, direction, and constructive feedback, as well as to colleagues who provided support during the research process. Finally, the author would like to acknowledge all parties whose contributions, either directly or indirectly, contributed to the successful completion of this research.

REFERENCES

Agustina, S., Megawati, F., Taufiq, W., Setyowati, N. A., & Nurani, S. D. G. (2024). Optimizing English learning in high schools with contemporary learning models using whiteboard animation. *Journal of Community Service and Empowerment*, *5*(3), 615–623. https://doi.org/10.22219/jcse.v5i3.35776

Alfares, N. S. (2025). Investigating the Efficacy of Wordwall Platform in Enhancing Vocabulary Learning in Saudi EFL Classroom. *International Journal of Game-Based Learning*, *15*(1). https://doi.org/10.4018/IJGBL.367870

Al-Rashidi, A. H. (2025). Does digital task-based instruction make a difference in EFL university students' motivation in Saudi Arabia? An Active theory perspective. *Learning and Motivation*, *90*, 102115. https://doi.org/https://doi.org/10.1016/j.lmot.2025.102115

Amaliyah, R. D., & Mastuti Rahayu, E. (2023). The Implementing of Using Wordwall as a Media to Improve The Students' Vocabulary Achievement in New Normal Era. *Edu-Ling: Journal of English Education and Linguistics*, *6*(2), 165–174. https://doi.org/10.32663/edu-ling.v6i2.3571

Augie, A. S., Rukuna, A. F., & Shehu, U. (2025). Impact of Mobile-Assisted Language Learning (MALL) on English Vocabulary Acquisition. *International Journal of Integrative Research*, *3*(9), 649–664. https://doi.org/10.59890/ijir.v3i9.64

Ayu, R., Agustiah, P., Mariyani, H., & Khotimah, R. N. (2025). The Impact of Mobile-Assisted Language Learning (MALL) on Students' Vocabulary Mastery. *JUPE : Jurnal Pendidikan Mandala*, *10*(4).

Azzahra, F., Rahmadita, J., & Hazmi, Z. (2025). The Effectiveness of Using Wordwall Website in Improving Science Learning Motivation in Elementary School: A Literature Review. In *IJOELA: International Journal of Education and Learning Assesment* (Vol. 01, Issue 01). https://scholar.google.com/.

Boroughani, T., Behshad, N., & Xodabande, I. (2023). Mobile-assisted academic vocabulary learning with digital flashcards: Exploring the impacts on university students' self-regulatory capacity. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1112429

Boroughani, T., Xodabande, I., & Karimpour, S. (2023). Self-regulated learning with mobile devices for university students: exploring the impacts on academic vocabulary

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

development. *Discover Education*, *2*(1), 5. https://doi.org/10.1007/s44217-023-00028-z

Capili, B., & Anastasi, J. K. (2024). An Introduction to Types of Quasi-Experimental Designs. *AJN, American Journal of Nursing*, *124*(11), 50–52. https://doi.org/10.1097/01.NAJ.0001081740.74815.20

David Creswell, J. (2023). *Sixth Edition*.

Diah Anggreini, N., Wirawati, B., & Surjowati, R. (2022). Using Wordwall.net As A Media To Improve Students Vocabulary Mastery At The Eighth Grade Of SMP Negeri 40 Surabaya. In *Journal English Education*.

Dou, A., Xu, W., & Xu, L. (2025). Interactive Learning Environments. *International Journal of E-Collaboration*, *21*(1), 1–16. https://doi.org/10.4018/IJeC.369815

Dwi Prastiwi, F., & Lestari, T. D. (2025). Digital Game-Based Learning in Enhancing English Vocabulary: A Systematic Literature Review. In *Jurnal Penelitian Ilmu Pendidikan Indonesia* (Vol. 4, Issue 2). https://jpion.org/index.php/jpi349JournalWebsite:https://jpion.org/index.php/jpi

Erlam, R., Philp, J., & Feick, D. (2021). The Adolescent Language Learner: Setting the Scene. In *Teaching Languages to Adolescent Learners* (pp. 1–18). Cambridge University Press. https://doi.org/10.1017/9781108869812.002

Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. *Language Learning & Technology*, *26*(2), 5–24. https://doi.org/10.64152/10125/73474

Hao, T., Wang, Z., & Ardasheva, Y. (2021). Technology-Assisted Vocabulary Learning for EFL Learners: A Meta-Analysis. *Journal of Research on Educational Effectiveness*, *14*(3), 645–667. https://doi.org/10.1080/19345747.2021.1917028

Herrero-Martín, M., Aldavero, C., Lahuerta, A., Carro, L., & Herrero, A. J. (2025). Developing Key Competencies in Primary Education Using Modern Board Games. *International Journal of Game-Based Learning*, *15*(1). https://doi.org/10.4018/IJGBL.393673

Hikmah, S. N., Wayan, N., Susanti, M., & Saputra, A. (2025). *The Effectiveness of Using Wordwall Application to Improve Students Vocabulary Mastery: A Study at the Seventh Grade of SMPN 2 Buer, Sumbawa Besar*. https://jeef.unram.ac.id/index.php/jeef/index

Jedi-Sari-Biglar, L., & Liman-Kaban, A. (2023). Exploring the effect of mobile-assisted task-based learning on vocabulary achievement and student attitude. *Smart Learning Environments*, *10*(1). https://doi.org/10.1186/s40561-023-00270-w

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN: 2723-4126**
***p*-ISSN: 2776-8880**

Katemba, C. V. (2025). *Role of Mobile-Assisted Language Learning in Improving Vocabulary Mastery among EFL Students*. *3*. https://jurnal.insanciptamedan.or.id/index.php/pebsas

Khasanah, W. P., & Suminar, R. P. (2023a). EDUCATIONAL ONLINE GAME FOR STUDYING VOCABULARY: WORDWALL ON PUPILS' PERCEPTIONS. *Academic Journal PERSPECTIVE: Language, Education and Literature*, *11*(2), 129–141. https://doi.org/10.33603/perspective.v11i2

Khasanah, W. P., & Suminar, R. P. (2023b). EDUCATIONAL ONLINE GAME FOR STUDYING VOCABULARY: WORDWALL ON PUPILS' PERCEPTIONS. *Academic Journal PERSPECTIVE: Language, Education and Literature*, *11*(2), 129–141. https://doi.org/10.33603/perspective.v11i2

Li, X., & Matar Hasan Alharbi, W. (2025). Impact of digital feedback, self-efficacy, and autonomy on motivation and general english performance in online courses. *Learning and Motivation*, *90*, 102121. https://doi.org/https://doi.org/10.1016/j.lmot.2025.102121

Li, Y., Chen, D., & Deng, X. (2024). The impact of digital educational games on student's motivation for learning: The mediating effect of learning engagement and the moderating effect of the digital environment. *PLOS ONE*, *19*(1), e0294350. https://doi.org/10.1371/journal.pone.0294350

Mahardika, P. A., & Sukardi. (2024). Android-Based Learning Media to Improve Understanding of Indonesian Vocabulary. *Jurnal Pendidikan Dan Pengajaran*, *57*(3), 631–643. https://doi.org/10.23887/jpp.v57i3.78678

Manihuruk, D. H. (2020). The Correlation between EFL Students' Vocabulary Knowledge and Reading Comprehension. *JET (Journal of English Teaching)*, *6*(1), 86–95. https://doi.org/10.33541/jet.v6i1.1264

Masrai, A., Milton, J., El-Dakhs, D. A. S., & Elmenshawy, H. (2021). Measuring the contribution of specialist vocabulary knowledge to academic achievement: disentangling effects of multiple types of word knowledge. *Asian-Pacific Journal of Second and Foreign Language Education*, *6*(1), 8. https://doi.org/10.1186/s40862-021-00114-5

Mayer, R. E. (2021). The Multimedia Principle. In R. E. Mayer & L. Fiorella (Eds.), *The Cambridge Handbook of Multimedia Learning* (3rd ed., pp. 145–157). Cambridge University Press. https://doi.org/DOI: 10.1017/9781108894333.015

Musthafa, F. A. D., & Anam, H. (2023). The Implementation of "wordwall" web-based games as instructional media to improve Arabic vocabulary mastery of 8th grade students at SMP Nurul Huda Modung. *Aqlamuna: Journal of Educational Studies*, *1*(1), 156–166. https://doi.org/10.58223/aqlamuna.v1i1.238

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

Nation, I. S. P. (2022). *Learning Vocabulary in Another Language*. Cambridge University Press. https://doi.org/10.1017/9781009093873

Okumuş Dağdeler, K. (2023). A systematic review of Mobile-Assisted Vocabulary Learning research. In *Smart Learning Environments* (Vol. 10, Issue 1). Springer. https://doi.org/10.1186/s40561-023-00235-z

Pallant, J. (2020). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS*.

Pradini, P. C., & Adnyayanti, N. L. P. E. (2022). Teaching English Vocabulary to Young Learners with Wordwall Application: An Experimental Study. *Journal of Educational Study*, *2*(2), 187–196. https://doi.org/10.36663/joes.v2i2.351

Pramudita, B. I., & Sunarso, A. (2024). Study of Wordwall Web Based Learning Media to Increase Student Learning Interest in Science Learning. *Jurnal Penelitian Pendidikan IPA*, *10*(10), 8149–8157. https://doi.org/10.29303/jppipa.v10i10.9502

Putri, M. A., Herpratiwi, H., & Firdaus, R. (2025). The Influence of Game Based Learning on Student Motivation in the Digital Era: Literature Review. *Jurnal Teknologi Pendidikan : Jurnal Penelitian Dan Pengembangan Pembelajaran*, *10*(1), 122. https://doi.org/10.33394/jtp.v10i1.13814

Putri, S. P., Irfan, & Husain, Muh. S. (2025). Web-Based Learning Media Wordwall in Fine Arts Learning to Increase Student Learning Motivation. *ETDC: Indonesian Journal of Research and Educational Review*, *4*(2), 342–348. https://doi.org/10.51574/ijrer.v4i2.3007

Rahmawati, R. A., & Dahlina, U. (2024). The Effect of Digital Flashcard on Students' Vocabulary Mastery at Seventh Grade of SMP Negeri 1 Kramatwatu. *JEDLISH : Journal of Education and English Language Teaching*, *4*(1), 41–49. https://doi.org/10.61664/jedlish.v4i1.165

Schmitt, N., & Schmitt, D. (2020). *Vocabulary in Language Teaching*. Cambridge University Press. https://doi.org/10.1017/9781108569057

Sugihartini, N., Elmunsyah, H., Nurhadi, D., & Rahmawati, Y. (2025). Innovative web-based microteaching model: To improve the teaching skills of prospective informatics teachers in vocational high schools. *Social Sciences and Humanities Open*, *11*. https://doi.org/10.1016/j.ssaho.2025.101344

Teng, M. F., Mizumoto, A., & Takeuchi, O. (2024). Understanding growth mindset, self-regulated vocabulary learning, and vocabulary knowledge. *System*, *122*. https://doi.org/10.1016/j.system.2024.103255

Tiara, A. G., Saefullah, H., & Nugraha, S. I. (2024). *Investigating EFL Learners' Engagement in Multimodal Vocabulary Learning : A Case Study*.

FOSTER JELT
Journal of English Language Teaching

Vol.7, No. 1, January 2026
***e*-ISSN**: **2723-4126**
***p*-ISSN**: **2776-8880**

Tonda, A., Pardo, R., Remolar, I., & Rossano, V. (2026). Educational games for learning vocabulary in English as a Foreign Language. *Entertainment Computing*, *56*, 101070. https://doi.org/10.1016/j.entcom.2025.101070

Verhoeven, M., Zijlstra, B. J. H., & Volman, M. (2021). Understanding school engagement: The role of contextual continuities and discontinuities in adolescents' learner identities. *Learning, Culture and Social Interaction*, *28*. https://doi.org/10.1016/j.lcsi.2020.100460

Wang, Z., Zou, D., Peng, P., Wang, F. L., Lee, L.-K., & Xie, H. (2025). Effects of mobile metaverse-based vocabulary learning on learners' perception and performance: a case study of Chinese EFL learners. *Journal of Computers in Education*, *12*(4), 1333–1366. https://doi.org/10.1007/s40692-024-00348-5