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Wordle: Gamification in Enhancing Students' Vocabulary

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Abstract

This study explores the integration of Wordle, an online word puzzle game, as a learning medium to enhance vocabulary acquisition among eighth-grade students. Gamification and Information and Communication Technology (ICT) plays a crucial role in reshaping educational systems, and Wordle's unique features make it an engaging tool for language learning. The study employs a quasi-experimental design and involved 40 students of a public school in Bulukumba, comparing an experimental class using Wordle with a control class receiving traditional instruction. Statistical analyses, including normality and homogeneity tests, paired sample t-tests, and N-gain score calculations, reveal significant differences in vocabulary acquisition between the two classes. The experimental class, using Wordle, demonstrated a more substantial increase in vocabulary proficiency compared to the control class. The findings suggest that incorporating innovative tools like Wordle can contribute to more effective language education, addressing challenges in vocabulary acquisition and enhancing overall learning outcomes. The study recommends the inclusion of words in English vocabulary teaching, emphasizing the importance of educators adapting to students' learning styles and leveraging technology for improved learning experiences.

Keywords: *Gamification, Wordle game, Vocabulary, ICT*

INTRODUCTION

Gamification is a method to captivate users' interest and involve them with a product. In the context of learning, gamification is often defined as gamified learning. Gamification is a technique that introduces dynamics related to game design into the educational environment. This is done to motivate students and have direct interactions, enabling them to significantly develop their curricular, cognitive and social competences (Manzano-Leon et al., 2021; Pfeiffer et al., 2020; Lampropoulos et al., 2022; Yan; 2023). According to Majuri et al, (2018) as cited in Zvereva et al, (2023) conveyed that, In the field of Education, gamification has been recognized as a promising approach, as it has the potential to incorporate motivational elements into the learning process. There is growing evidence

indicating that gamification is progressively gaining acceptance as an effective learning strategy for developing highly engaging learning experiences. From the recent empirical studies, the success of digital games in education has sought to validate the positive impacts of gamification, particularly in motivating students to improve their vocabulary (Fithriani, 2023; Waluyo & Leal, 2021; Dindar et al., 2020). This occurs since gamification makes learning process in the class more enjoyable and can greatly enhance students' motivation and engagement. Many students find traditional pedagogy is a boring method. Gamification combines educational content with games elements, making the learning process both educational and entertaining.

A game is form of amusement characterized by established rules, preset, and fixed structure (Ruisi, 2023). Using the appeal of games in an educational context not only captures the attention of students but also make the learning experience into an enjoyable and participatory endeavor. Kobari et al. (2020) Stated that the incorporation of games into teaching has been found to have a positive impact on students' motivation and academic achievement. According to Ferreira et al., as mentioned in Liu et al. (2020), the concept of learning through games is one of the oldest and most beneficial pedagogical ideas that has been consistently employed throughout human history. Among the numerous of educational games, Wordle emerges as a standout choice, seamlessly blending entertainment with education. Wordle is widely enjoyed online game that presents a daily puzzle consisting of a five-letter English word every day (Zhang, 2023; Hasani, Prebreza, & Krypa, 2023). Wordle was released in October 2021 by software engineer Josh Wardle. Within a brief period, it achieved global popularity, drawing in numerous new players and securing a position on the top-searched list in 2022. The game's principle is quite straightforward: players have six attempts to guess a five-letter word. Following each guess, the letters are color-coded in green, orange, and grey; Correctly positioned letters are indicated in green, while letters present in the target word but located incorrectly are highlighted in yellow, letters that are not in the day's Wordle are displayed in gray, providing the player with hints on how to proceed in guessing the hidden word (Ritchey, Patterson, Patterson, & Ritchey, 2023). Unlike other word games, Wordle has a unique feature in that only one word can be guessed per day, and this rule applies uniformly to all players.

Observing the interesting development and features of Wordle, educators, including teachers, have started using Wordle games as an alternative method to motivate students and enhance their vocabulary, particularly in English subject. Effective communication in a foreign language, like English, requires a foundational knowledge of its vocabulary. Understanding the vocabulary is essential for proper and coherent communication (Sari & Aminatun, 2021). Mastering vocabulary undeniably demands more attention, particularly for foreign language learners. The process of learning English as a foreign language is deemed confusing, as it requires the substantial number of words in the target language that need to be mastered. However, the acquisition of vocabulary plays a crucial role in mastering a language. Susanto (2023) stated that, a learner with less vocabulary is likely to face challenges in various aspects of the language, this is also reinforced by Tran (2020) who stated that without a sufficient vocabulary, learners face challenges expressing their ideas, thoughts, or emotions, and struggle to comprehend the meaning of the written and spoken texts. Hence, there is a need for more effective and advanced learning designs that are engaging and supportive in the process of acquiring new vocabulary. Additionally, the efficacy of learning is influenced by educators' techniques and delivery, as emphasized by Hariati (2020) that an educator should have the skill to ignite in language learning among students, as it can cultivate and enhance their motivation. Furthermore, Li (2023) stated that the vocabulary teaching methods and strategies employed by teachers directly impact students' memorization, accumulation, understanding, and application of vocabulary. Without effective guidance from teachers, students may struggle to master vocabulary memorization methods and may resort to mechanical memorization.

Given these challenges, there has been a continual development of ICT-based learning in the field of education. This is attributed to the belief that its application and advancement have brought about numerous positive influences. Recent research by Batanero et al. (2021) provides empirical support to the positive impact of ICT implementation in language classes, showing improvements in both writing and reading skills. This underscores the potential of ICT, and by extension, games like Wordle, in not only addressing existing challenges but also elevating the overall effectiveness of language education. As we navigate the intersection of education and technology, the exploration of innovative tools such as Wordle becomes a compelling avenue for educators and learners alike. This study delves into the multifaceted

aspects of Wordle's integration into educational practices, exploring its impact on students' vocabulary enhancement. This study is still in the development stage, and will likely continue to experience further development. It is important to note that in this research, limited references may occur due to the limited use of Wordle media which is currently still not widely applied in the scientific literature. Nevertheless, researchers still view it as a challenge and opportunity to deepen understanding of this topic. The courage to undertake this study arose from an awareness of the lack of knowledge that still exists in the current literature. With limited references available, researchers were inspired to carry out this research in the hope that it could make a valuable contribution to the understanding of Wordle as a learning medium.

METHODOLOGY

This study adopted a quasi-experimental design. Data were gain by administering pre-test and post-test to assess students' scores before and after the treatment. The pre-test, conducted at the beginning of the lesson, aims to identify initial differences between the control and experimental class. The post-test, administered after the treatment, would be used to evaluate differences between the two classes. The experimental class was instructed using the Wordle media method, while the control class was received conventional instruction without digital media. Following the computation of scores, the researchers conducted a statistical analysis on the outcomes of the two classes. The impact of the intervention was assessed employing t-test. If there were significant differences between the experimental class and the control class, it would indicate the influence of the treatment. The analysis of the collected data involved four main steps: assessing data normality, homogeneity of variance test, hypothesis testing using t-test and determining the total gain. The study focused on eighth-grade students from a public school in Bulukumba, with each class comprising 20 students.

FINDINGS

The presentation of data analysis is to find out the calculation the results of the data obtained. This aims to answer research questions related to how significant the difference in vocabulary skills obtained by students with differences learning methods in classes that using Wordle as a learning media and classes that do not use it. Then, the results obtained will be

calculated by using statistical calculations (SPSS). The first step is calculating the normal distribution of pre-test of experimental classes and control classes. The result is presented in the following table.

Table 1. Test of Normality (Pre-test)

		Shapiro-Wilk		
	Class	Statistic	df	Sig.
Result	Pre-test Experimental Class	.910	20	.064
	Post-test Experimental Class	.927	20	.137
	Pre-test Control Class	.904	20	.050
	Post-test Control Class	.948	20	.339

Based on the data above, it can be concluded that the results of the pre-test taken from the experimental class and the control class are normally distributed. The result of significancy pre-test of experimental class was 0,64 while significancy of control class was 0,50. On the other hand, the normality data distribution on post-test in experimental and control class has similar result to pre-test data. After testing the normal distribution data, the next study tested the homogeneity of variance.

Test homogeneity from pre-test to obtain homogeneity data between pre-test data in experimental classes and control class.

Table 2. Test of Homogeneity of variance

Levene Statistic	df1	df2	Sig.
3.537	1	38	.068
2.619	1	38	.114
2.619	1	35.091	.115
3.253	1	38	.079

Based on the data obtained, it can be concluded that based on mean with significance .0.68, median with significance .114, Median and with adjusted *df* with significance .115 and trimmed mean with significance .079 > than 0.05. So, it can be concluded that the two classes

are homogeneous. After testing the homogeneity of the data, the next is testing paired sample statistic of pre-test and post-test experimental class.

Table 3. Paired Sample Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PreTest	49.50	20	14.140	3.162
	PostTest	77.40	20	10.485	2.345

In the data output above, a summary of the descriptive statistical results of the pre-test and post-test scores, is shown. For the pre-test score, the average learning result or mean was 49.50. Meanwhile, for the post-test scores, the average learning outcome score was 77,40. The number of respondents or students used as research was 20 students. For Std values. Deviation (standard deviation) in the pre-test was 14.140 and the post-test was 10.485. Lastly is the Std value. The Mean Error for the pre-test was 3.162 and for the post-test was 2.345.

Because the mean score of learning outcomes in the pre-test is 49.50 < post-test 77,40, this means that the score descriptively indicates significant differences in student learning outcomes before and after the administration of the treatment, in this case the use of Wordle media in learning process. Furthermore, to prove this significant difference, it is essential to interpret the results of this t-test, as illustrated in the following table.

Table 4. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PreTest Expr - PostTest Expr	-27.900	11.832	2.646	-33.437	-22.363	-10.546	19	.000

In the table, it can be observed that the result found in the Sig. (2-tailed) column is .000. Based on the decision-making criterion, "If the significance value (2-tailed) < 0.05, then Ho is rejected and Ha is accepted," it signifies a significant change in the mean scores between

pre-treatment and post-treatment learning outcomes. This implies an influence of using Wordle media in enhancing students' vocabulary. Lastly is testing determining the total gain.

Table 5. Determining the Total Gain

Calculating data	Mean Score	Minimum Score	Maximum Score
Experimental Class	55,5%	16.67%	81,82%
Control Class	49,8%	13,33%	78,57%

Based on the results of the N-gain score test calculation above, it shows that the average N-gain score for the experimental class is 55,5%, which is included in the ineffective category. With a minimum N-gain score of 16,67% and a maximum of 81,82%. Meanwhile, the average N-gain score for the control class was 49,8%, which was in the less effective category. With a minimum N-gain score of 13,33% and a maximum of 78,57%. Thus, it can be concluded that experimental classes with the use of Wordle as a learning media can enhance student vocabulary compared to control classes that do not use it.

DISCUSSION

Considering the data, it's probable that the null hypothesis (Ho) is rejected due to the notable differences demonstrating that students who accept Wordle media achieve a higher vocabulary in English than students who follow traditional methods, i.e., don't use Wordle or any digital media. Furthermore, the findings indicate that, on average, the experimental class's pupils did better on the post-test than they did on the pre-test. Wordle media was used to teach vocabulary acquisition to the experimental class, which was effective for the students. Wordle showcases imaginatively created words to give students a fun and engaging approach to learn new words. It therefore aids students in comprehending word correspondences. Students can seek for definitions and patterns in the words that are presented. Wordle enables us to create a word based on the frequency of words in the specific text. Students can integrate larger words into the text to grasp their meaning through context. Nwachukwu et al. (2022) states that Wordle is a web-based tool that can help cement the

interface between reading and writing. The tool produces word clusters based on the frequency of words occurring in a sample of writing. This approach aligns with Marzano's vocabulary learning strategy, where the students are encouraged to illustrate, provide explanations, offer non-linguistic meaning, and discuss in learning words (Pamungkas, 2021). Several earlier studies have conducted research focused on the impact of digital media or ICT-based media on students' mastery of vocabulary.

The use of ICT as a learning media for vocabulary acquisition not only enhance the learning experiences but also result in statically significant differences in language proficiency (Quieoz et al, 2021; Çil, 2021; Govindasamy et al, 2019). Despite implementing various types of ICT, the students demonstrated better performances in vocabulary achievement. Integrating digital media into English learning can result in various positive outcomes, including increased engagement and motivation among students. Multimedia materials through ICT technology can make the formal and informal experience of learning shareable and retainable, and can be enriching for learners' language experiences (Alobaid, 2020). The use of digital media for language learning can be motivating, especially if the digitally supported activities meet students' needs and interests, and if they correspond to the way they use digital communication in their daily lives (Erlam, Philip, & Feick, 2021). Digital media has the potential to significantly enhance students' English language skills. Therefore, teaching English through Wordle enables students to enhance their vocabulary skills. It has been proved and parallel by recent research by Pamungkas (2021) who confirmed that students who were provided Wordle as learning media illustrated improved English vocabulary achievement. Thus, it is hoped that after conducting research on the utilization of ICT in the teaching process, educators will give more attention and consider it as a way to modernize the syllabus. This is especially relevant to teaching methods aligned with the demands of the 21st century, many of which are centered around the effective use of ICT.

CONCLUSION

Based on statistical findings, the introduction of Wordle media to eighth grade students at public junior high school has the potential to increase their vocabulary acquisition. In addition, there were variations in the mean scores observed between the control class and the

experimental class. This study also showed significant differences in scores between the control class and the experimental class. The effectiveness of the application of Wordle in improving students' vocabulary proficiency is suggested. Therefore, it is highly recommended to incorporate Wordle into English vocabulary teaching as a a way to modernize the traditional syllabus. Apart from that, teachers must also show creativity and innovation in developing various forms of media during the teaching and learning process to create a conducive learning environment. It is important for educators to consider their students' learning styles by providing appropriate technology-based media to improve overall learning outcomes.

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