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Assessing the Effectiveness of Online Quizizz in Enhancing University Students' Vocabulary Mastery

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Abstract. This study aims to assess the effectiveness of using Quizizz in improving students' vocabulary acquisition. Various studies have shown that this interactive platform can significantly improve students' vocabulary. In this study, the average pre-test score of students was recorded at 30.71, while after using Quizizz, the score increased to 68.06, which shows the effectiveness of this platform. In addition, another study showed a 24.34% increase in vocabulary acquisition, with a significant difference between pre-test and post-test scores. Repeated use of Quizizz was also demonstrated to progressively improve students' scores, as seen in a classroom action study, with a score increase from 55.31 in the pre-test to 91.87 in the second cycle post-test. In addition to vocabulary acquisition, Quizizz also managed to increase students' enthusiasm and engagement in the learning process, which positively impacted their learning experience. This study also shows that collaborative activities combined with Quizizz can further strengthen vocabulary acquisition. Overall, using Quizizz proved effective in improving vocabulary acquisition, strengthening learning motivation, and creating a fun learning atmosphere. The platform also allows lecturers to provide quick assessment and feedback and monitor student progress through its analytics feature. Therefore, quizzes are an effective tool for supporting vocabulary learning at the university level.
Keyword: Quizizz; Vocabulary Mastery; Interactive Learning

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INTRODUCTION

Online quizzes, such as Quizziz, are increasingly used as learning tools in modern education, particularly to improve students' vocabulary acquisition. As an independent variable, online quizzes provide various features that support interactive learning, such as gamification elements (points, rankings, and challenges), immediate feedback, and the ability to customize quizzes according to material needs (Cigdem et al., 2024). These features make learning more engaging and create a more effective learning experience (Mumford & Miller, 2018). Thus, online quizzes are a learning tool that can increase

students' engagement, motivation, and understanding of vocabulary and have great potential to support technology-based learning.

Vocabulary acquisition, as the dependent variable in this study, is an important part of overall English proficiency. Online quizzes allow students to learn and repeat new vocabulary systematically, thus improving their recall and comprehension (Yang et al., 2021). In addition, vocabulary acquisition includes students' ability to understand, recall, and use new vocabulary in the proper context (Graves, 2016). Through the gamification elements and repetitive practice offered by online quizzes, students are expected to significantly improve their vocabulary skills, both in terms of comprehension and application (Thiagarajah et al., 2022)

Online quizzes such as Quizlet and Flippity effectively improve vocabulary acquisition through interactive learning (Barbetta, 2023), (Abdullah Al-Malki, 2020). Gamification elements on platforms such as Kahoot increased motivation and retention, with 85% of students preferring it over traditional methods (Lohitharajah & Youhasan, 2022). Online self-paced learning approaches are associated with better vocabulary retention (Gimaletdinova & Khalitova, 2016). Nonetheless, technical challenges, students' comfort with the platform, and the importance of evaluation by educators to optimize vocabulary instruction should be noted (Hao et al., 2019). Overall, online quizzes showed positive results, but effective technology integration in pedagogical practices remains essential to maximize learning outcomes. This study underscores the need to develop and utilize this platform in the context of higher education.

Research on online quizzes, specifically gamification and feedback, shows excellent benefits in vocabulary learning. Gamification increases student engagement and motivation, which helps them learn vocabulary better. Apps like Quizziz were shown to make students more engaged, motivated, and happy while learning (Orhan Göksün & Gürsoy, 2019), (Zainuddin et al., 2020). Students who used gamification in Quizizz scored higher than those using the usual method, with one study showing an average score of 86 for the gamification group, while the control group was only 78. Many students prefer using gamification because it is more effective in helping them remember and more engaging. Quizzzes provide immediate feedback, which helps students understand the material better and correct their mistakes (Gaylard Baleni, 2015). The ability to tailor quizzes to student performance makes learning more personalized and improves vocabulary recall (Grant & Basye, 2014).

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The utilization of online quizzes in education has been widely researched and shown to impact learning outcomes and student engagement positively. These quizzes are an effective assessment tool to improve students' vocabulary comprehension. Several studies have shown that online quizzes have a strong relationship with improving students' vocabulary acquisition (Sanchez et al., 2020). When combined with synchronous lectures, online quizzes conducted asynchronously proved more effective.

It is more effective in helping students master vocabulary than other methods (Mahalingam & Fasella, 2017).

Continuous testing with different types of quizzes is also associated with improved vocabulary acquisition and better knowledge recall (Uchihara et al., 2019). In addition, research has also shown that university students generally view online quizzes positively and experience increased motivation and vocabulary comprehension during their learning process (Suk, 2017).

Many research studies However, studies that specifically address the application of Quizziz in higher education are still limited. Most studies focus on the application of gamification at the primary and secondary school levels, while its effect on college students' vocabulary learning has not been a significant concern (Fithriani, 2021). In addition, although university students tend to favor gamification approaches over traditional methods, further analysis is needed regarding technical barriers, students' readiness to use the platform, and optimal strategies for integrating Quizizz into the higher education curriculum (Pavita & Nirmala, 2021). Therefore, this study aims to address these gaps by evaluating the extent to which Quizizz can improve students' vocabulary acquisition through an approach that includes gamification, providing immediate feedback, and personalizing learning. This research is expected to make a new contribution to developing technology-based learning strategies at the tertiary level.

The primary purpose of this study is to evaluate the extent to which online quizzes, specifically Quizzes, are used. The platform can improve vocabulary acquisition among tertiary students. This research examines the impact of using Quizizz in helping university students expand and master their English vocabulary through interactive and technology-based learning methods. The main focus of this study is to assess the extent to which gamification elements in Quizizz, such as the point system, leaderboards, and structured repetition of material, can increase students' motivation and engagement in the vocabulary learning process. As such, this research also aims to provide deeper insights into how this platform can be effectively implemented in higher education language learning to support students' vocabulary acquisition.

METHOD

This study adopts a quantitative approach to evaluating the effectiveness of using online quizzes to improve students' vocabulary acquisition. It focused on one group of participants who were evaluated before and after using an online quiz platform, such as Quizizz, in the vocabulary learning process. An experimental design was applied to data collection through a pretest before the intervention and a post-test after the participants had used Quizizz for some time.

The questions in the baseline and end-line tests were designed to measure vocabulary acquisition, emphasizing understanding the meaning of words, applying words in sentences, and recognizing synonyms and antonyms. This study aimed to assess participants' ability to understand the meaning of words, use words appropriately in sentences, and recognize the relationship between similar words. The data obtained from the pretest and final test scores will be analyzed using paired t-tests to evaluate the significance of the difference in scores before and after using Quizizz. This study focuses only on quantitative analysis and does not involve qualitative elements to provide an understanding of the impact of online quizzes on vocabulary acquisition in specific groups of students.

Table 1 Indikator Research

Variable	Evaluation Indicators Using Quizizz	Evaluation Indicators Without Using Quizizz	Reeferences
Independent Variable: Use of online Quizziz	The use of Quizizz in evaluating students' vocabulary mastery.	Without using Quizziz (using other manual evaluation methods,	(Pusparani, 2021), (Salsabillah et al., 2023).

		such as paper-based tests).	
Dependent variable: Vocabulary mastery improvement	Students' vocabulary mastery after doing questions using Quizziz.	Students' vocabulary mastery after working on questions without using Quizziz.	(Aini & Ma'rifah, 2021), (Krisbiantoro, 2021).
Indicators of evaluation of work results	Quiz scores that measure students' vocabulary mastery in the form of multiple choice or fill-in-the-blank.	Manual Test Score that measures students' vocabulary mastery in multiple choice or fill-in-the-blank questions.	(Vu & Bui, 2023), (Rose, 2020).
	Number of correct vocabulary achieved by students in Quizziz questions (recognizing and using vocabulary).	Number of vocabularies mastered in the manual test (Measures comprehension and use of vocabulary).	(Brahmana, 2022), (Salmela et al., 2021).
	Quizziz completion time that demonstrates efficient work on vocabulary questions.	Manual test completion time to measure speed in answering vocabulary questions.	(Hurtado & Díaz, 2021), (Levine et al., 2020).
	Direct Feedback from Quizizz that helps students improve their vocabulary immediately after the test.	Manual Correction and time needed to give feedback to students (Ha & Nguyen, 2021).	(Pesántez-Sigüenza & Naranjo-Andrade, 2023), (Ha & Nguyen, 2021).
Comparison	Automatic Evaluation through Quizizz, providing immediate score and feedback.	Manual Evaluation requires slower correction and feedback from the instructor.	(Manipatruni et al., 2023), (Mekterovic et al., 2020).
Analysis of Results	Comparison of student scores after working on questions in Quizizz compared to without using Quizizz.	Comparison of manual test scores to measure overall and manual vocabulary acquisition.	(MOHAMAD, 2020), (Wang et al., 2022).
	Evaluation of efficiency in learning vocabulary (time and amount of mistakes) through Quizizz.	Manual evaluation that measures vocabulary acquisition through paper-based tests or assignments.	(Nordin, 2023), (Ramesh & Sanampudi, 2022).

This study aims to analyze students' vocabulary mastery through two evaluation methods, namely Quizizz and the manual method, with various analytical approaches. First, descriptive analysis was conducted to describe the profile of respondents as well as the distribution of evaluation results, which included the average score, the number of vocabulary words mastered, the time taken to complete the questions, and the level of feedback. Second, correlational analysis was used to measure the relationship between Quizizz and improving students' vocabulary mastery, focusing on the frequency of use and the efficiency of question time. Third, linear regression analysis aimed to analyze the effect of using Quizizz on students' vocabulary mastery and moderation by

evaluating the efficiency and speed of question completion. Furthermore, the moderation analysis of the challenge identifies factors that influence the relationship, such as the availability of access to technology and differences in question difficulty. This study aims to evaluate and compare the effectiveness of Quizizz in vocabulary acquisition, assess the time efficiency and accuracy of both methods and provide recommendations for utilizing Quizizz as an effective evaluation tool in vocabulary learning. The results of this study are expected to be a reference in the development of technology-based learning strategies.

RESULTS AND DISCUSSION

The use of Quizizz has been shown to have a significant impact on improving students' vocabulary acquisition in various educational contexts. Several studies have shown that this interactive platform captures students' attention and results in measurable improvements in their vocabulary skills. In a study involving university students, the average score before using Quizizz was 30.71. After using this platform, it increased to 68.06, which shows the effectiveness of Quizizz in teaching vocabulary. In addition, another study showed that students experienced an increase of 24.34% in vocabulary mastery, with a t-test showing a significant difference between the scores before and after using Quizizz. Repeated use of Quizizz also shows progressive benefits, as seen in a classroom action study where students' scores increased significantly, from 55.31 in the pre-test to 91.87 at the end of the second cycle. On the other hand, using Quizizz also increased students' enthusiasm and engagement in the learning process, contributing positively to their learning experience. In addition, research also revealed that collaborative activities coupled with the use of Quizizz can further improve vocabulary acquisition, suggesting that an interactive learning environment supports successful vocabulary learning among university students.

Quizizz has proven effective in improving students' vocabulary acquisition at the university level by increasing learning motivation and strengthening student engagement during the learning process. Various studies have shown that this platform can help students understand and remember vocabulary better. Quizizz creates a fun learning atmosphere, which increases students' motivation to study harder, and its use of game elements makes students more enthusiastic and engaged in taking tests. In addition, Quizizz also supports students in understanding and remembering vocabulary more effectively by providing opportunities for interactive practice, which deepens mastery of the material. On the other hand, Quizizz makes it easier for lecturers to provide assessment and feedback quickly and provides analytic features that allow lecturers to monitor the progress of students' vocabulary mastery directly. Overall, using Quizizz as a learning tool improves students' vocabulary acquisition and creates a more engaging and interactive learning experience, making it an effective tool in supporting the language learning process at the university level.

Table 2 Descriptives

Descriptives				
			Statistic	Std. Error
Before treatment	Mean		52.00	3.742
	95% Confidence Interval for Mean	Lower Bound	44.17	
		Upper Bound	59.83	
	5% Trimmed Mean		52.22	
	Median		50.00	
	Variance		280.000	
	Std. Deviation		16.733	

	Minimum		20	
	Maximum		80	
	Range		60	
	Interquartile Range		30	
	Skewness		-.126	.512
	Kurtosis		-.984	.992
After Treatment	Mean		77.50	1.902
	95% Confidence Interval for Mean	Lower Bound	73.52	
		Upper Bound	81.48	
	5% Trimmed Mean		77.78	
	Median		80.00	
	Variance		72.368	
	Std. Deviation		8.507	
	Minimum		60	
	Maximum		90	
	Range		30	
	Interquartile Range		10	
	Skewness		-.036	.512
	Kurtosis		-.589	.992

Before treatment, the data showed a mean of 52.00 with a wide range between a minimum of 20 and a maximum of 80, resulting in a variance of 280.000 and a standard deviation of 16.733. The distribution scores were slightly skewed to the left, with a skewness value of -0.126 and a kurtosis of -0.984, indicating the data distribution tended to be flatter than a normal distribution. After the treatment, the mean was significantly increased to 77.50, with a narrower range of scores between 60 and 90. The variance and standard deviation also decreased to 72.368 and 8.507, indicating a more focused data distribution. The distribution of the post-treatment data was more symmetrical, reflected by the skewness value being closer to zero (-0.036) and kurtosis being closer to normal (-0.589). These results indicate a significant improvement in post-treatment scores, with more concentrated and consistent data.

Table 3 Test of Normality

Tests of Normality							
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
HasilBelajar	1	.163	20	.169	.939	20	.233
	Kelas Postest	.216	20	.016	.874	20	.014
a. Lilliefors Significance Correction							

The normality test results indicate differences between the pretest and posttest data. For Learning Outcomes (Pretest), both Kolmogorov-Smirnov and Shapiro-Wilk tests produce p-values greater than 0.05, namely 0.169 and 0.233, which means that the pretest data is usually distributed and can be analyzed using parametric tests. However, for the Posttest Class, both tests produced a p-value smaller than 0.05, namely 0.016 on Kolmogorov-Smirnov and 0.014 on Shapiro-Wilk, which indicates that the posttest data is not normally distributed. Thus, the analysis for posttest data may require non-parametric tests because it does not meet the normality assumption.

Table 4 Test of Homogenity of Varience

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
HasilBelajar	Based on Mean	11.710	1	38	.002
	Based on Median	10.012	1	38	.003
	Based on Median and with adjusted df	10.012	1	33.063	.003
	Based on trimmed mean	11.927	1	38	.001

The results of Levene's Test for homogeneity of variance indicate that the variance between groups is not homogeneous. Tests were conducted using several approaches, namely based on mean, median, median with adjusted degrees of freedom, and trimmed mean, and all resulted in p-values smaller than 0.05. Specifically, the p-values for the tests based on the mean were 0.002, the median 0.003, the median with adjusted degrees of freedom 0.003, and the trimmed mean 0.001. Since the p-values for all of these tests are smaller than 0.05, this indicates that the variances between the groups being compared are not homogeneous. Thus, statistical tests that do not rely on the assumption of homogeneity of variance, such as non-parametric tests, are recommended for further analysis.

Table 5 Paired Samples Test

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 – Postest	-25.500	17.614	3.939	-33.744	-17.256	-6.474	19	.000

The Paired Samples Test results indicate a significant difference between the pretest and posttest scores. The mean difference between the pretest and posttest was -25.500, indicating that the posttest scores were higher than the pretest, with a difference of 25.500 points. The distribution of this difference has a standard deviation value of 17.614 and a standard error of the mean value of 3.939, which indicates the precision of the estimate of the mean difference. In addition, the 95% confidence interval for the difference in scores between the pretest and posttest is between -33.744 and -17.256, which does not include 0, indicating that this difference is indeed significant. The t-value of -6.474 with df = 19 and p-value = 0.000 indicates that the difference between the pretest and posttest is statistically significant. Thus, it can be concluded that the intervention carried out (e.g., the Quizizz application) significantly improves student learning outcomes.

Table 6 Ranks

Ranks				
		N	Mean Rank	Sum of Ranks
Postest – Pretest	Negative Ranks	0[a]	.00	.00
	Positive Ranks	20[b]	10.50	210.00
	Ties	0[c]		
	Total	20		

a. Postest < Pretest
b. Postest > Pretest

c. Postest = Pretest

Based on the Wilcoxon Signed Ranks Test analysis results table, no students had lower posttest scores than the Pretest, recorded in the Negative Ranks (Postest < Pretest) category with N = 0. In contrast, all students experienced an increase in posttest scores compared to the Pretest, seen in the Positive Ranks (Postest > Pretest) category with a total of N = 20, Mean Rank = 10.50, and Sum of Ranks = 210.00. In addition, no students had the same posttest score as the pretest score, which was recorded in the Ties (Postest = Pretest) category with N = 0. Overall, it can be concluded that all students showed an increase in scores after taking the posttest compared to the Pretest.

Table 7 Test Statistics

Test Statistics[a]	
	Postest - Pretest
Z	-4.472[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

The Wilcoxon Signed Ranks Test results showed a value of Z = -4.472, indicating a significant difference between the pretest and posttest scores. The negative value indicates that the difference is more important on the posttest than the pretest. In addition, the value of Asymp. Sig. (2-tailed) = 0.000, more diminutive than 0.05, indicates that the difference between the pretest and posttest is statistically significant. Thus, there is a substantial increase in students' learning outcomes after following the given intervention.

CONCLUSION

Based on the evaluation results, this study shows that using Quizizz is significantly more effective in improving university students' vocabulary acquisition than conventional approaches or methods that have not utilized interactive technology. With an increase in the average post-test score of 25,500 points and a statistical significance value ($p < 0.05$), the results of this study confirm the significant contribution of Quizizz in creating more engaging and effective learning. Compared to previous studies, which may only focus on technology-based learning in general or without systematic measurement, this study provides strong empirical evidence of the impact of Quizizz in a university context. Nevertheless, this study still has limitations, such as a small sample size and a focus on one language skill. Therefore, further research is needed to examine the effectiveness of Quizizz in collaborative learning, other language skills, and continued implementation in the curriculum. Thus, this study provides a foundation for further exploration in utilizing interactive technology more widely and strategically.

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