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Enhancing 21st-Century Learning: The Impact of Gamification with Quizwhizzer on English Language Vocabulary Acquisition

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A B S T R A C T

In the realm of 21st-century learning, the integration of digital tools like Kahoot! and Quizizz has ushered in an era of interactive learning experiences; particularly in enhancing students' acquisition of English language vocabulary. However, amidst the advancement of digital tools in education, arises a necessity for diverse platforms. Therefore, this study aims to assess the efficacy of incorporating Quizwhizzer application as a gamification tool within the educational landscape. This study employs the Quizwhizzer application to investigate the impact of gamification approach on the English language vocabulary performance of 42 Pre-university students. The participants' English language vocabulary scores are subjected to be analysed using quasi-experimental design. The findings show students' notable improvement with the inclusion of gamification method, with effect size of 1.223 indicated a large effect size. This study's findings underscore that Quizwhizzer, akin to Kahoot! and Quizizz, serves as an effective gamification tool for enhancing students' performance in English language vocabulary.

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INTRODUCTION

In light of the fourth industrial revolution and the advent of 21st-century learning paradigms, there has been a discernible surge in efforts to enhance education across various dimensions, including instructional methodologies and pedagogical strategies. It is evident that there exists a pressing need to refine teaching and learning practices, adopting novel and innovative approaches to facilitate the advancement of students' English language proficiency. Consequently, a range of methodologies has been introduced to address the evolving educational landscape, among which the gamification method has garnered attention in the educational world and in research. Despite being considered a novel method by educators (Rahmani, 2020) and researchers, gamification enjoys widespread popularity among them. A study conducted by Basuki and Hidayati (2019) indicates that gamification applications such as Kahoot! or Quizziz have garnered positive responses. Licorish et al. (2018) further enhances the argument by asserting that the integration of educational games in the classroom environment not only aids in improving English performance but also minimizes distractions, thereby enhancing the overall quality of teaching and learning beyond traditional methods. Additionally, they note that factors contributing to students' improved learning outcomes include the provision of relevant content in Kahoot!, timely feedback, and the implementation of effective gameplay strategies. Nevertheless, educators and researchers continually seek nourishment for innovative methods, and gamification is no exception. While applications like Kahoot! and Quizziz have been extensively utilized for years, it is imperative to explore alternative options to ascertain their efficacy in comparison. Hence, this study introduces the Quizwhizzer application to examine its effectiveness and functionality as a gamification tool for enhancing English vocabulary acquisition.

LITERATURE REVIEW

Gamification in classroom and the use of online game in education

In the research discussion on gamification, Kapp (2012) defines gamification as the process of engaging people, motivating action, promoting learning, and solving problems using game mechanics, aesthetics, and game thinking. De Liu et al. (2017) in expends, explain gamification as the incorporation of game design elements into a target system while retaining the target system’s instrumental functions. Although the concept of gamification emerged years ago, its recent surge in popularity coincides with technological advancements. Premanand (2014) states that numerous studies have been conducted in recent years to demonstrate that games can be used in the classroom to stimulate the learning process. He also adds that gamification has created a wonderful way to increase interest in the classroom because of the principle of using game elements like scores, points, and rewards in which created a wonderful way to increase interest in the classroom. In the same year, The NMC Horizon Report (2014) shows on how gamification of education is gaining support among educators who recognise that well-designed games can best result in significant increases in student productivity and creativity. Building upon these findings, Lee, and Hammer's study (2011) reveals the incorporation

of game- like elements in the classroom has been implemented by many schools all around the world in which schools already incorporate several game-like elements. For instance, students earn points for correctly completing assignments. These points correspond to "badges", which are more commonly referred to as grades. Lee and Hammer (2011) further illustrate how this system culminates in a "level up" for high-performing students at the end of each academic year, underscoring the motivational aspect of gamification. Their study has proven that gamification is a common feature applied to every school which can promote students' motivation and allow them to participate actively in the learning process. Besides, it opens doors for learners to enhance their learning experience and acquire skills to solve any tasks or challenges in the class (Flores, 2015). Overall, the synthesis of research indicates that gamification has long been integrated into educational paradigms, offering a potent tool to boost student motivation, participation, and skill acquisition.

The burgeoning popularity of gamification persists to this day. Nowadays, applications like Kahoot! and Quizizz have become integral tools in teaching and learning practices. Wang and Tahir (2020) in their utilization of Kahoot! in a study, highlighted its positive impact on learning performance, classroom dynamics, students' and teachers' attitudes, and students' anxiety. Similarly, another study focusing on the Kahoot! app found it to be advantageous in fostering motivation, engagement, and reinforcing learning across theoretical and practical domains (Debbita Tan Ai Lin et al., 2018). As for Quizziz application, Zhao in 2019 reveals that, class section in which Quizizz is applied more frequently reports higher scores on the satisfaction of using this app and higher scores on the instructor's teaching evaluation. However, as educational practices evolve, there is a growing need for additional applications to enhance classroom experiences. Hence, this study proposes to investigate the effectiveness of another application; Quizwhizzer app, which has the same function as Kahoot! and Quizzes in improving English vocabulary among students through gamification techniques. Quizwhizzer has seamlessly integrated itself into the educational landscape. Drawing on the research methodology employed by Oktika et al. (2023) in their research on improving students' vocabulary mastery using Quizwhizzer, this study adopts a similar approach. Statistical analysis utilizing SPSS will gauge whether significant differences exist between pre- and post-usage of Quizwhizzer in teaching English vocabulary. These findings underscore the potential of gamification in enhancing English language vocabulary performance. Consequently, this study aims to test the following hypothesis:

H1: There is a significant difference in the performance of students learning English vocabulary in Experimental Group (EG) using Quizwhizzer as the gamification app as compared to the Control Group (CG) undergoing traditional vocabulary learning methods.

Conceptual Framework

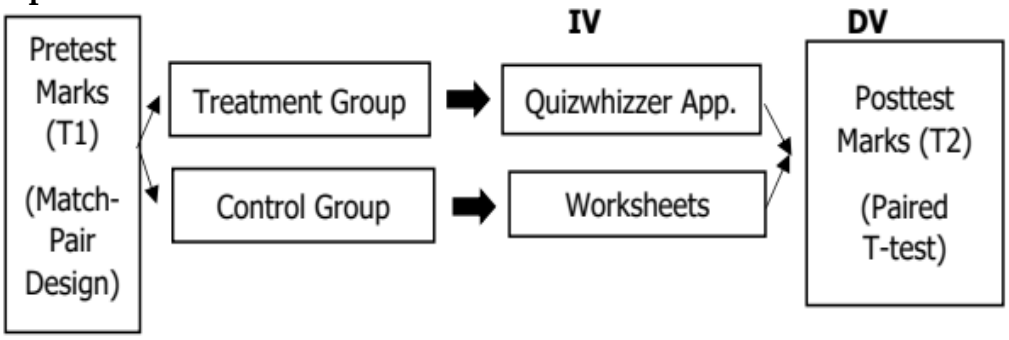

Figure 1. Conceptual Framework

METHODOLOGY

This research employs a quantitative method using quasi-experimental design as it allows researchers to gather numerical data that can be objectively measured and analysed statistically. It utilizes quantitative data collection, followed by its data analysis and interpretation of entire analysis. Weight typically is given to the quantitative data as research is pertinent considering the needs for statistical analysis utilizing SPSS to identify the significant differences between pre- and post-usage of Quizwhizzer in learning English vocabulary. The hypothesis addresses the relationship or comparison of gamification and English language vocabulary performance variables participants at Preparatory Centre of Science and technology (PPST), UMS, Sabah, Malaysia. The data collection process involves administering pretest (T1) and posttest (T2) to 42 participants from the Preparatory Centre of Science and Technology (PPST) at Universiti Malaysia Sabah. The pretest and posttest consist of English vocabulary questions adapted from the Effective Text MUET Textbook and are verified for validity and reliability by the English Course Coordinator.

In the quantitative study, quasi-experimental research design is used as it aims to establish a cause-and-effect relationship. Quasi-experimental research design also does not rely on random division of participants. Participants are divided into two groups: the control group and the experimental group. The division is based on non-random criteria, specifically using the marks students attained in the first semester of English results. This approach ensures that both groups have equal backgrounds in terms of their English language performances. The quasi-experimental design is employed to establish a cause-and-effect relationship between gamification (experimental group) and traditional methods (control group) in learning English vocabulary. The reason why quasi-experimental research design is proposed in this research is to ensure the validity of the sample size (N) in which both groups must present equal background in terms of their English language performances and background. The division of the group will be done by using the marks the students attained in the first semester of English result. The result is compared by using the match- pair design in which the mean value is calculated and used to divide the participants. A match-pair design is an experimental design used when an experiment is conducted with two treatment conditions.

In this study, the English vocabulary set of questions from the Effective Text MUET Textbook are adapted to be aligned with the Pre-University lesson content and are verified by the English Course Coordinator of Preparatory Centre of Science and Technology to ensure the validity and reliability of the test. The participants are grouped into two groups, which are called control and experimental group. The control group is given English vocabulary questions via worksheets; meanwhile, the experimental group is given English vocabulary questions via Quizwhizzer online game in 9 weeks of implementation. The Pretest (T1) and Posttest (T2) are conducted. Basically, the pretest and posttest are used to see the differences between two treatment conditions (traditional method and gamification method). These tests are calculated by using Paired T-test. In which, to compare the means of two measurements taken from the same individual, object, or related units.

Research Innovation

The Quizwhizzer application has the same concept as Kahoot! and Quizziz. By using Quizwhizzer, students answer Multiple Choice Questions (MCQ). In the application, interactive templates such as Snake and Ladder, Squid Game and many more are presented to the students. Students are required to complete the challenges in each level to win the game. 'Up level' is awarded to students who answer three correct answers in a row. Besides, students who attempt many correct answers in a row receive a symbol indicates 'on fire' on the screen to challenge other students in the game. Top three students are chosen in each game to show who have the most accurate answers in within time given.

Population Sampling

In this study, the targeted participants originated from a population of 42 students studying in Universiti Malaysia Sabah under the Preparatory of Science and Technology. This is because they are the closest match to the research objective and are studying at the Pre-University level. In the population and sampling for the quantitative phase, the sample size is determined by using Paired T-test. The result shows that at least 8 participants are needed in each group. Therefore, in this study, 42 students are chosen to participate in the research to ensure there will be no shortage in sample size of the research especially when dividing them into two groups: control and experimental. All students are given a pretest (T1) by using the questions adapted from Effective Text MUET Textbook aligned with the Pre-University English lesson content and are verified by the Course Coordinator to ensure the validity and reliability of the test in this research. Then, the result from the test is compared and the mean value is calculated. The mean is used to rank them, and random assignment is done. The participants are divided into two groups; one group is chosen to be the control group and the other one is the experimental group to undergo two different treatment conditions. In total, 42 students participated in this research. The details of the participants can be referred to in Table 1 Research Population and Sampling.

Table 1. Research Population and Sampling

Participant's Label	Pretest (T1) Marks	(CG=Control Group, EG=Experimental Group)
1	65	EG
2	67.5	EG
3	70	EG
4	72.5	EG
5	70	EG
6	75	EG
7	72.5	EG
8	70	EG
9	70	EG
10	67.5	EG
11	77.5	EG
12	70	EG
13	70	EG
14	75	EG
15	70	EG
16	70	EG
17	70	EG
18	75	EG
19	70	EG
20	70	EG
21	70	EG
22	75	CG
23	70	CG
24	72.5	CG
25	67.5	CG
26	72.5	CG
27	67.5	CG
28	80	CG
29	72.5	CG
30	72.5	CG
31	70	CG
32	70	CG
33	75	CG
34	70	CG
35	72.5	CG
36	67.5	CG
38	72.5	CG
38	67.5	CG
29	80	CG
40	72.5	CG
41	72.5	CG
42	70	CG

Research Instrument

Two research instruments are used: Quizwhizzer Application for the experimental group and online worksheets for the control group. These instruments contain sets of vocabulary questions aligned with the Pre-University English lesson content. Scores from both instruments are collected and analysed using Paired T-tests to compare performance between the two groups.

Instrument 1: Quizwhizzzer Application

In this study, the first research instrument is the Quizwhizzer Application. The score from the 9 tests in the app are taken and analysed by using the Paired T-tests to compare the score between two groups: Experimental Group and Control Group. The questions taken are adapted from Effective Text MUET Textbook aligned with the Pre-University English lesson content and are verified by the Course Coordinator. The questions are related to sets of vocabularies on phrases and expression that can be used in MUET. The Quizwhizzer application is utilized to investigate whether the online game helps to improve the English language vocabulary performance among Pre-University Student in a Public University. The effectiveness is compared to the traditional method given to the control group that receives the same sets of questions in the study.

Instrument 2: Online Worksheets

The second research instrument is the Worksheet. Likewise, the questions in the worksheet are adapted from Effective Text MUET Textbook aligned with the Pre- University English lesson content and are verified by the Course Coordinator. The score from the 9 tests in the worksheet are taken and analysed by using Paired T-test to compare the score between two groups: Experimental Group and Control Group. The online worksheet is given to the experimental group in the research and is compared to the control group who received the intervention.

Validity and Reliability

Validity is ensured through construct validity, where the research instruments accurately measure English language vocabulary performances. Content validity is also maintained by aligning questions with the syllabus content and verifying them with the Course Coordinator. Reliability is tested using Paired T-tests to determine the sample size needed for each group. Heale and Twycross (2015) stated that, validity is defined as the extent to which a concept is accurately measured in a quantitative study. The validity of the study can be described as construct validity. Content validity occurs when the research instruments can measure all aspects. In this study, the questions used in the test are adapted from Effective Text MUET Textbook aligned with the Pre-University English syllabus content and are verified by the Course Coordinator to ensure the validity of the study in testing the participants' English language vocabulary performances. Sets of Paired T-tests are performed on each test level and the total test scores. The 9 sets of questions are adapted from Effective Text MUET Textbook aligned with the Pre- University English lesson content by Cecilia Arul

et al. (2021). It is a very practical instrument as it is being aligned with the Pre-University English syllabus and are verified by the Course Coordinator. It is also easy to administer and can be completed in a short time. It is easy to mark as there is only one correct word for each item and each answer is marked as correct or incorrect. Meanwhile, the reliability of the constructs used in Quizwhizzer Application is tested by using Paired T-test and based on the analysis, 8 participants in each group are needed to be in the sample size.

Quantitative Method

The main data analysis technique used is the Paired T-test, which compares the means of two measurements taken from the same individuals (pretest vs. posttest) in both the control and experimental groups. Assumptions for the Paired T-test are met, including numeric and continuous sample data, independence of observations, normal distribution of the dependent variable, and absence of outliers. The gamification tool that is chosen to administer the research instrument for the Experimental Group is Quizwhizzer and as for the Control Group, online worksheets are utilised. Multiple templates are used in each test to make sure the students do not feel bored. Both groups are administered with the same set of questions for nine times in nine different 3-hour lessons where each time, students are taught with sets different of vocabularies and are only given 7 minutes of duration to answer 10 MCQ in each set. It has been shown that approximately 60 second per question is per multiple choice item is required (Tookoian, n.d.). The questions are based on the topic covered in the lesson of the week and the online game and the no gamified method are administered as the set of activities of the lessons. Data is collected during the Pretest (T1) and after the nine weeks of the gamification intervention to collect on the Posttest marks (T2) in Microsoft Excel to be used for data analysis. The questions given in the Pretest and Posttest were the same questions and had the same number of questions with the same time limit (28 minutes each set).

RESEARCH RESULT

In this study, data collected at two time points throughout: Pretest (T1) before the intervention and Posttest (T2) 9 weeks after the intervention. A total of 42 students in the Pre-University level volunteered to participate in the study. Data collected is analysed through Paired T-Test aim to investigate the changes in mean scores between groups that has been given different treatment at two different time points. Few assumptions are analysed to validate the data. The first assumption, the paired sample t-test requires the sample data to be numeric and continuous, as it is based on the normal distribution, the observations are independent of one another, the dependent variable should be approximately normally distributed, and the dependent variable should not contain any outliers (Statistic Solution, 2022). In this study, the first assumption is met since the sample data is indeed in numeric and continuous within a range of students' English language vocabulary scores. The second assumption is also met as it is reasonable to assume that the participating students are independent of one

another. The third and fourth are also met since the dependent variable is normally distributed and the dependent variable does not contain any outliers.

Assumptions

Assumptions such as normality of data are tested using statistical tests like Shapiro-Wilk test for sample sizes less than 50. Descriptive statistics are also presented, including mean scores and standard deviations. The test for normality conducted in this study with the sample size, N=42, was done with Shapiro-Wilk, as the test is more appropriate method for small sample sizes (<50 samples) although it can also be handling on larger sample 41 size while Kolmogorov–Smirnov test is used for n ≥50 (Mishra et al., 2019).

Table 2. Descriptive Data for Test of Normality for two different time Point

	Criteria	Statistics	Df	Sig.
EG	Pretest	.912	21	.061
	Posttest	.947	21	.296
CG	Pretest	.958	21	.477
	Posttest	.946	21	.280

As shown in Table 2, the significant value of EG in Pretest is greater than the alpha value for testing normality; p>.05, therefore, it can be summarized that EG Pretest data is normally distributed. Meanwhile, the significant value of EG in Posttest is greater than the alpha value for testing normality; p>.05, showing that EG Posttest data is also normally distributed. As for the CG, the significant value of Pretest is greater than the alpha value for testing normality; p>.05, summarizing CG Pretest data is normally distributed. Meanwhile, the significant value of CG in Posttest is also greater than the alpha value for testing normality; p>.05, proving that CG Posttest data is normally distributed.

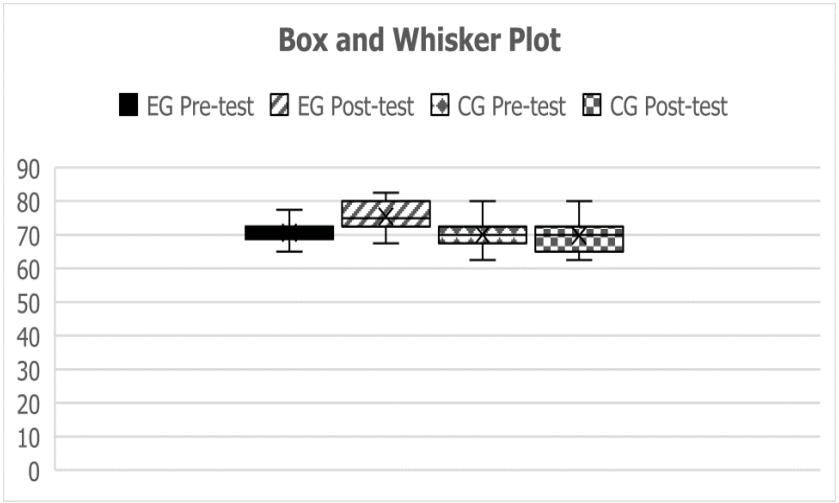

Figure 2. Box and Whisker Plot for Test for Outliers Indicator for two Different Time Points (EG Pretest, EG Posttest, CG Pretest and CG Posttest)

In Figure 2, Box and Whisker Plot for Test for Outliers Indicator for two different time points shows no outliers in EG Pretest, EG Posttest, CG Pretest and CG Posttest.

Effect Size, Cohen's d

The study includes 42 participants, ensuring an adequate sample size based on effect size, alpha level, and two measurements (pretest and posttest). Participants have similar backgrounds as Pre-University students from the same faculty and university. In this study, students score |-1.223| = 1.223 for EG and 0.148 for CG. This indicates that effect size Cohen's d for EG in both tests indicate large effect size and for CG in both tests indicate small effect size.

Table 3. Cohen's Effect Size

Relative Size	Effect Size
Small	0.2
Medium	0.5
Large	0.8

Formula for the effect size, Cohen's d:

Effect Size =
(Pretest Mean – Posttest Mean) / (Pooled Std. Deviations for both tests)

Participants' Characteristics

Participants' characteristic in the case of this study; effect size is set at 0.8 (large effect size as stated in Cohen, 1992); alpha level (0.05) and two measurements (pretest and posttest) recommended a sample size of eight. The result shows that at least 8 participants are needed in each group. Therefore, at least 42 participants are chosen to participate in the study to ensure there will be no shortage in sample size of the study. The background of each participant is similar; Pre-University Students and came from the same faculty and university. Overall, the data analysis process in this paper involves rigorous statistical techniques, validity checks, and adherence to research design principles to evaluate the impact of gamification on English language vocabulary performance.

Findings

Paired T-Test is conducted to compare the effect of online game to improve English language vocabulary performance among Pre-University students in a Public University between two groups: Control Group and Experimental Group to meet the assumptions listed mentions at the beginning of the chapter. The study measures vocabulary scores of two groups at two time points. It aims to investigate on changes of the vocabulary performances to the intervention proposed. Paired T-Test is used because Pallant (2016) stated that, Paired-Samples is used when you test the same people on more than one occasion, or you have matched pairs. The analysis is stated as below:

Table 4. Score of Vocabulary Performance of Control Group (CG) and Experimental Group (EG) at Pretest

		Mean	Effect Size
Pretest	EG	70.6	3.61
	CG	70.1	3.99

Based on Table 4, the difference of mean value between these two groups is 0.5, shows the mean value for EG is slightly higher than the mean value of CG in Pretest. However, the small difference does not affect the grouping of participants in this study.

Table 5. Score of Vocabulary Performance for Control Group (CG) and Experimental Group (EG) at Posttest

		Mean	Effect Size
Posttest	EG	75.48	4.23
	CG	69.76	4.87

Based on Table 5, the difference of mean value between these two groups is 5.72, shows the mean value for EG is significantly higher than the mean value of CG in Posttest. It shows that gamification has greatly improved the performance of students in EG as compared to the non-gamification method that was undergone by the CG.

Table 6. Comparison between Score of Vocabulary Performance for Control Group (CG) and Experimental Group (EG) from Pretest to Posttest

Group	Pretest	Posttest	Difference in mean value between Pretest and Posttest
EG	70.6	75.48	+4.88
CG	70.1	69.76	-0.34

The difference in mean value between posttest and pretest is +4.88 for EG and -0.34 for CG as shown in Table 6. It shows that gamification has improved significantly on the overall student's performance in vocabulary from pretest to posttest, whereas non- gamification method does not have positive impact on the performance.

Table 7. Score of Vocabulary Performance for Control Group (CG) and Experimental Group (EG) at Pretest and Posttest

		Mean	Standard Deviation	t	df	p-value
EG	Pretest	70.60	3.61	-56.1	20	<0.001
CG	Posttest	75.48	4.23			
EG	Pretest	70.12	3.99	0.68	20	0.505
CG	Posttest	69.76	4.87			

Two separate Paired-samples T-tests are conducted to evaluate the impact of the intervention (gamification) on students' performance on the vocabulary test. Based on Table 7, there is a statistically significant increasing in student's vocabulary score for EG group from Pretest (mean=70.60, SD=3.61) to Posttest (mean=75.48, SD=4.23), t(20) =-5.61, p<0.001 (two-tailed). The mean increase in students' vocabulary score is 4.88 with 95% confidence interval ranging from -6.70 to -3.06. The Cohen's d effect size of 1.223 indicated a large effect size. In addition, there is a decreasing in student's vocabulary score for CG group from Pretest (mean=70.12, SD=3.99) to Posttest (mean=69.76, SD=4.87), t(20) =0.68, p=0.505 (two-tailed). The mean decrease in students' vocabulary score is 0.36 with 95% confidence interval ranging from -0.74 to 1.45. The Cohen's d effect size of 0.148 indicated a small effect size.

DISCUSSION

The study employs a quasi-experimental design using a quantitative approach to gather numerical data for statistical analysis. This approach allows for an objective measurement and analysis of the effectiveness of gamification using the Quizwhizzer application in improving English vocabulary performance among Pre-University students. The study utilizes Paired T-Test analysis to compare the mean scores of vocabulary performance between the Experimental Group (EG) and Control Group (CG) at two different time points: Pretest (T1) and Posttest (T2). The study ensures the validity of its quantitative analysis through several key assumptions and validations. Results indicate that both EG and CG data in Pretest and Posttest are normally distributed, meeting the assumption for Paired T-Test analysis. The Box and Whisker Plot analysis shows no outliers in EG and CG for both Pretest and Posttest, ensuring the robustness of the data. Cohen's d effect size is calculated to determine the magnitude of the difference between Pretest and Posttest scores. A large effect size (1.223) is observed for EG, indicating a significant impact of gamification on vocabulary performance.

The quantitative analysis revealed a significant impact of gamification on vocabulary performance scores for the Experimental Group (N=21) during both the Pretest (M=70.60, SD= 3.61) and Posttest (M=75.48, SD= 4.23), with a p-value <0.001. In contrast, the Control Group (N=21) showed no significant improvement (p-value > 0.001) when no gamification intervention was implemented. The Paired T-Test analysis reveals significant improvements in vocabulary performance for the EG, which underwent gamification using Quizwhizzer, compared to the CG that used traditional methods. The EG demonstrated a mean increase of +4.88 in vocabulary scores, while the CG showed a mean decrease of -0.34. The effect sizes further emphasize the substantial impact of gamification, with EG showing a large effect size (1.223) compared to CG's small effect size (0.148). These results validate the hypothesis that gamification significantly enhances English vocabulary acquisition among Pre-University students. This aligns with the existing literature, which consistently demonstrates the positive outcomes of gamification across various

fields and languages, as supported by recent studies on application of Quizwhizzer.

Sitanggang et al. (2023) demonstrates that educators who adopted Quizwhizzer in teaching Civic Education have experienced significant changes in their ability to teach Civics; where they found that using Quizwhizzer allowed them to become more engaged in learning, create engaging material, and adapt their learning approach to students' needs. Moreover, Quizwhizzer serves as a versatile gamification tool across various fields, including media learning, as evidenced by Wahyuningsih et al. (2021) found it is worth using by teachers in doing learning in the classroom for its features. In the realm of language education, Quizwhizzer is utilized to teach Japanese Language, with Efendi and Sutiyarti (2023) affirming its ability to bolster student motivation in Japanese language quizzes. In this study, the results show Quizwhizzer application's effectiveness and functionality as a gamification tool for enhancing English vocabulary acquisition.

Several factors contribute to the observed benefits of gamification in education. Gamification not only facilitates topic mastery but also fosters engagement, encouraging students to delve into unfamiliar subject matter, as noted by Ibanez and Kloos (2014). Akdogan (2017) further emphasizes the advantages of incorporating gaming elements into vocabulary instruction, as it combines learning with enjoyment. In today's digital age, technology has become an integral part of daily life, making it indispensable in educational settings. With traditional teaching methods often failing to capture students' interest, alternative approaches such as gamification offer a solution to engage learners effectively. Moreover, contemporary students are inherently drawn to technology, with internet-connected devices being integral to their lifestyles. This tech-savvy generation finds platforms like Kahoot! and Quizzes appealing, driving educators to explore additional applications like Quizwhizzer to diversify teaching strategies and maintain student engagement. As such, the integration of gamification into educational practices represents a proactive response to the evolving needs and preferences of modern learners.

CONCLUSIONS AND RECOMMENDATIONS

The study demonstrates the efficacy of gamification, particularly through the Quizwhizzer application, in improving the English vocabulary performance of Pre-University students. Despite initial perceptions of vocabulary learning difficulty, students exhibited significant improvement in their vocabulary skills through engagement with the game. The findings support previous study indicating the positive impact of gamification on student learning outcomes. Through the incorporation of game elements into educational contexts, students not only enhance their subject knowledge but also experience heightened motivation and enjoyment in the learning process. Numerous avenues for future studies emerge from the current study. Despite the growing interest in gamification within the education sector, its application remains relatively novel. Therefore, further quantitative investigations are warranted to ascertain its efficacy, particularly concerning English language education. Moreover, qualitative, and mixed-method studies are essential for delving deeper into

students' perceptions and motivations regarding gamified learning experiences. Additionally, since not all students are inclined to engage with online gaming platforms, exploring alternative modes of gamification is crucial for inclusivity and effectiveness in future studies. Future research endeavours should prioritize the investigation of English language vocabulary acquisition across various educational levels. Despite its pivotal role in language development, vocabulary acquisition often receives inadequate attention in English teaching and learning contexts. Moreover, there exists a dearth of studies focusing on specific vocabularies pertinent to students at different educational stages. For instance, Pre-University students preparing for the Malaysian University Examination Test (MUET) require mastery of specific vocabularies relevant to their academic pursuits. Therefore, conducting further research in this area holds immense potential to benefit students, educators, and researchers alike, by providing insights into effective vocabulary instruction strategies.

ADVANCED RESEARCH

The study acknowledges limitations, including the small sample size and potential lack of generalizability to broader populations of ESL learners. Future studies could address these limitations by expanding the sample size and considering diverse learner demographics. Additionally, exploring students' vocabulary levels beyond the classroom and assessing the impact of external factors on vocabulary acquisition would enrich the findings. Further investigation into students' willingness to participate and its influence on learning outcomes could provide valuable insights for educators and researchers alike.

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