The Effectiveness of Using Game-Based Quizizz in Teaching Vocabulary (An Experimental Study of the Eleventh-Grade Students of SMAN 2 Pujut)

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Abstract: This research aims to determine the effectiveness of using Game-Based Quizizz on the vocabulary mastery of eleventh-grade students at SMAN 2 Pujut. This research was pre-experimental research with one group pre-test-post-test design. The population in this research was class XI IPA 1 students at SMAN 2 Pujut. The sampling technique used in this research was a purposive sampling technique with one experimental class. The results obtained from the data analysis showed that the mean score of the pre-test was 30.71 and after treatment, the mean score of the post-test increased to 68.06. Data collection was divided into three steps i.e., pre-test, treatment, and post-test. A result with a significance value of 0.00 was found and the significance value obtained was lower than the alpha value i.e., 0.05. The test results showed that the significance value (α) is lower than the value (0.00 > 0.05), meaning that the use of Game-Based Quizizz is effective. Therefore, the use of Game-Based Quizizz is very effective for teaching vocabulary to students and can effectively improve students' vocabulary mastery.

Keywords: vocabulary mastery, game-based Quizizz, effectiveness

INTRODUCTION

According to Setiawan (2018), the influence of the global world has brought progress in all aspects of life, especially in science and technology. The digital world is making changes in the fast-paced order of life (Danuri, 2019). Adults and children are increasingly skilled in using technology. Thus, the use of technology becomes a very vital need in people's lives. It is hoped that this progress will also have a positive impact on the world of education. This can be used as a supporting tool in learning processes and activities that are much more attractive to the generation z and alpha.

In this digital world, we are required to be able to use technology. Thus, the use of technology has had a positive impact in the world of education. Because digital learning media is more attractive to the generation Z and Alpha. To assist the student's learning process and provide the best possible learning results, teaching strategies must be used while teaching vocabulary (Nurislam et al., 2023). In language teaching, one of the digital learning media that can be used is Game-Based Quizizz. According to Mulyati & Evendi (2020), Quizizz is a game in application and website form. It can be used in learning activities to students be more enthusiastic about taking lessons cause fun learning is needed. Moreover, Quizizz is a game-based learning media with interactive and fun exercises (Purba, 2019). This choice of media is very interesting for students because it provides the opportunity for them to play while learning by utilizing every facility offered in Quizizz. Apart from that, the Quizizz application can be used by educators to review their performance through student learning outcomes. The use of the Quizizz game media is suitable as a learning media choice. Students also have to know about the benefits of Quizizz application they use. In this research, the researcher used an experimental research in a high school as a method of research and data collection through a vocabulary understanding test by using a formula mean score. The researcher implemented in pre-test-post-test

research design, its validity are taken by the researcher e.g. reading, listening, and even writing which will become competency standards for getting some information and problems in the content of the test.

Based on the previous research that has been done by the researchers. The purpose of this research is to find out the effectiveness of Game-Based Quizizz. The researcher is interested because in terms of topics that want to be studied more deeply regarding more innovative and creative English learning strategy to achieve effectiveness and also it is real problem that exist in the English learning process. So, the target of this research is in investigating whether the use of Game-Based Quizizz is effective in teaching vocabulary to the eleventh-grade students of SMAN 2 Pujut. The researcher uses quantitative research to collect data.

RESEARCH METHOD

The researcher conducted quantitative research with pre-experimental design where one group pre-test post-test design was used as research design. The data were collected by using testing which a strategy of researchers in school. The influence on the students in teaching vocabulary understanding, there are two variables i.e., students' vocabulary score as the dependent variable and Game-Based Quizizz as the independent variable.

O1XO2

Where:
O1 = Pre-test
O2 = Post-test
X = Treatment using Quizizz
Source: (Emzir, 2014)

Before the experiment, a set of participants were pre-tested and then they were retested. By doing testing on samples

that have never been done before pre-test used this method (O1). Whiteboards and quiz were used to teach internal material at specified time. Post-test data were obtained from experimental findings where students' understanding grows or no change at all, after learning using whiteboards and Quizizz. There is the possibility of vocabulary mastery was influenced by the use of digital learning media Game-Based Quizizz if the pre and post-test results are different.

The population of this research is XI grade students of IPA of SMAN 2 Pujut, Central Lombok, Pujut district, Teruwai village in the 2023/2024 academic year. The writer selected the class to be tested based on the classes that met the criteria (what is meant is that the class has students who are competent, easy to manage and superior). The number of students of SMAN 2 Pujut is 592 students and divided into two programs: IPA (Science) and IPS (Social Studies). For students in class XI, the IPA program has seven classes and the IPS Program has four classes, with an average of 31 students each class. Arikunto (1992) stated that if the number of subjects is more than one hundred. 10%‑15 % or 20%‑25% should be taken a sample, but if the number of populations is one hundred, but if less this is not required to take a population sample.

Purposive Sampling is a technique sampling used by researchers if the research has certain considerations in taking the sample or determining the sample for a specific purpose by (Riduwan, 2012). In this research, the samples studied were 31 students in class XI IPA 1 at SMAN 2 Pujut. Eleventh grade is the level of learning for students where they have already entered senior high school for a year and this is an evaluation of their learning outcomes by taking a test and becoming their preparation material for grade XII (twelve) with an English score that is adequate and satisfactory English score on their rapport card. XI IPA 1 was indeed a class that has been considered to be used as a sample and population because it met several criteria such as being a superior class in the IPA program, and it was easy to manage that class orderly, polite and also considered representative of the population to produce logical data.

In this research the researcher used statistical tests, to test the students by using Game-Based Quizizz. The analysis was collected based on the average (mean) of each variable. This average score is obtained by showing the overall data in each variable and then divided by the number of respondents. The teaching materials were in Unit 1 about Legend in the advanced Merdeka Curriculum book for class XI. This material included narrative text, where students understood the context of words and sentences, looked for the meaning of words and sentences, and be able to compose sentences from the vocabulary contained in Legend, type of narrative text. The value of giving the children reading texts could prove that this way is an effective way of introducing fun and enjoyable English lessons to beginning learners of English (Wahyudi et al., 2021)

Testing was conducted with pre- and post-tests in this research assessment. Assessment was the process of collecting data or information used to measure the achievement of a goal. To conduct the assessment, the task or question models used were multiple choice and fill-in-the-blank. Many models prevented students from feeling monotonous with just one model, so some alternative question models in the application of game-based Quizizz were applied to increase vocabulary understanding, making it more interesting, innovative, and creative. First, there was multiple choice, where students selected the best answer from the available options, and second, fill-in-the-blank, which required matching the words to make it connected.

To collect the data, the following process was followed: pre-test, treatment, and post-test. The group of learners was given a pre-test before the experimental treatment. The pre-test was distributed to determine the students' vocabulary comprehension skill before applying the Quizizz application. The treatment was conducted over three meetings for one class (XI IPA 1), each meeting lasting 1x40 minutes. After the treatment was completed, a post-test was administered to assess the achievement. The effectiveness of learning treatments was measured by pre-test and post-test. Initially, the researcher collected the data using a paired t-test to determine the condition before and after using an independent variable. The researcher used the t-test formula with the help of SPSS Version 25 to calculate the data (the researcher conducted a statistical analysis using the test scores (pre-test and post-test) to determine the effectiveness and identify a significant effect of using Game-Based Quizizz in teaching vocabulary to eleventh-grade students (XI IPA 1) of SMAN 2 Pujut).

In analyzing the data, the first step, the pre-test was calculated to find the mean score:

The formula as follows:
$$(\text{Mean score})\overline{\sum} = \frac{number\ of\ data}{number\ of\ subject}$$

Then, the researcher gathered all of the scores in pre and post-test to find the comparison, the writer used one of the types of t-tests which is the one sample t-test. One samples are the same subjects but these subjects experienced different treatments. This type of t-test was used to determine the conditions before and after the intervention of one group of subjects which measured twice, then first using the paired samples t-test.

This type of t-test was used to determine the conditions before and after the intervention of one group of subjects which measured twice by formula:

$$t = \frac{\bar{x} - \mu_0}{s\bar{x}}$$

Where:

$\bar{x}$ is the sample mean
μ_0 is the test value, or the proposed constant for the population
$s\bar{x}$ is the sample's standard error of the mean, it calculated using the formula

For Range formula to find out the lower and higher scores as follow:

$$R = Xmax - Xmin$$

To prove the hypothesis, the assumption of the experiment in one group which has calculated by using t-test formula as follows:

$t_0 > t_t$: If the null hypothesis (H_0) is accepted, then the results of the research are considered insignificant. It means there is no significant effect of using Game-Based Quizizz in teaching vocabulary to the students at the eleventh grade of SMAN 2 Pujut

$t_0 < t_t$: if the null hypothesis is rejected and the alternative hypothesis (Ha) is accepted, usually the research results are considered significant. It means there is a significant effect of using Game-Based Quizizz in teaching vocabulary to the students at the eleventh grade of SMAN 2 Pujut.

RESULTS AND DISCUSSION

Regarding to the finding, this research was conducted at SMAN 2 Pujut, Pujut District, Teruwai Village starting from February to March 2024, data collected was obtained by test (pre-test and post-test). Meanwhile the method used is quantitative. Detailed student data was obtained from there using data analysis from the use of Game-Based Quizizz to improve students' vocabulary mastery at SMAN 2 Pujut.

The Score of Pre and Post test of the Eleventh Grade Students at SMAN 2 Pujut

The data of students' scores were collected by using Paired Sample T-test' formula and help of SPSS which used to find out the effectiveness of Game-Based Quizizz after researcher conducted the test. The pre-test and post-test were given to find out students' vocabulary mastery scores before the researchers gave the treatment and after the treatment.

Table 1. Pre-Test and Post-Test Scores

No	Name	Pre-test	Post-test
1	AW	26,6	75
2	AD	13,3	40
3	ANKS	26,6	85
4	DFRH	33,3	70
5	DI	13,3	50
6	DP	26,6	60
7	DK	33,3	70
8	FEB	26,6	60
9	GW	13,3	55
10	HA	20	45
11	KI	20	75
12	LF	20	65
13	MA	40	90
14	MDS	26,6	65
15	MN	26,6	60
16	MAR	40	85
17	MF	53,1	65
18	NH	26,6	85
19	NY	20	75
20	OL	40	50
21	RPP	66,6	80
22	RAM	20	70
23	SS	33,3	60
24	SSF	20	70
25	SI	33,3	75
26	SO	26,6	60

No	Name	Pre-test	Post-test
27	TGRA	66,6	70
28	UD	20	75
29	WFL	40	90
30	WJAD	40	55
31	ZNH	40	80
Mean Score		30,7	68
Min		13,3	40
Max		66,6	90

The mean score of pre-tests is 30.7 with the minimum score is 13.3 and the maximum is 66,6 the mean scores of post-tests is 68 with minimum score is 40 and maximum is 90. The Range (Xmax – Xmin) of Pre-test is (66,6 – 13,3 = 53,3) and the range of post-test (90 – 40 = 50), the improvement of mean score pre-post-test is (68 – 30,7 = 37,3). So, in this Testing research can be concluded that there was a significant different between the pre and post-test. The standard of passing grade in English subject at SMAN 2 Pujut is 75 and it can be seen from the table above that monthly students did not pass the passing standard of the subject. After being given treatment by applying Game-based Quizizz in learning activities, it shows an improvement.

Mean score of pre-tests and post-test from 30.71 to 68.06 shows an improvement of 37.34. It can be seen the mean score of the post-test is higher than pre-test mean score. It means that the eleventh-grade student of SMAN 2 Pujut already improve their vocabulary mastery use Game-Based Quizizz in this research. Then the normality test is use to know whether the data of control and experimental class was normally distributed or not (Mishra et al., 2019). Based on the calculation on SPSS 25 version above, the test result show that the data of one group pre-test and post-test is normally distributed. Otherwise, the pre-test and post-test significant value of Kolmogrov-Smirnov, we can see that statistic of Kolmogrov (0.13) and Smirnov (0.93) is higher than α (0.05), so can be concluded that the data is normal.

Table 2. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
VAR (A)	31	30.716	13.5025	2.4251
VAR (a)	31	68.06	12.954	2.327

Table 3. One-Sample Test

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
VAR (A)	6.481	30	.000	15.7161	10.763	20.669
VAR (a)	22.808	30	.000	53.065	48.31	57.82

To find out whether the significance value is higher or lower than the t-table, the data analyzed using SPSS statistic 25. The analysis was carried out to find out the effectiveness of using Game-Based Quizizz to the eleventh-grade student's vocabulary mastery. Table 2 above shows the output of paired samples statistics of the data. It can be seen from the Table 3 that the t-test value is higher than t-table (6.850 > 2.046), then

the test result show that the sig (2-tailed) of Pre-test and Post-test is 0.00 with degree of freedom (df = 30). this sig (2-tailed) is (0.00 < 0.05). it shows that there is a significant effect and Ha is accepted in improving the student's vocabulary mastery at the eleventh-grade students of SMAN 2 Pujut by using Game-based Quizizz.

Discussion

Data collected was taken based on the intended results so that are conclusion and data analysis has been done. The aims in this research were using Game-Based Quizizz to improve students' vocabulary at SMAN 2 Pujut refers to testing group class at eleventh grade. The types of tasks on the test such as fill in the blank and multiple choice. To increasing students' vocabulary mastery can be concluding by score where pre-test and post-test had a significance different.

For pre-test and post-test as the test instruments consisted of multiple choice and fill in the blank and focus on three kinds of vocabulary (verb, noun and adjective). At the time, students had difficulty answering the pre-test sheet because they didn't know the meaning of the questions or the option. Comprehension is poor, even in reading questions it is very slow and suddenly falls silent because students find it difficult to analyze the vocabulary in the reading. During the treatment period with lesson plans in several meetings for eleventh grade of IPA 1, they underlined the vocabulary a lot in the reading they read. After giving treatment that is in the form using Game-Based Quizizz, they looked more enthusiastic in understanding the meaning and significance of words and trying to find out the words they did not know. Their achievement increased from a few correct answers to quite a lot of correct answers.

Based on theory of Authors like Kapp (2012) and McGonigal (2011) discuss how game elements can enhance engagement and learning outcomes. Games are indeed methods that involve students' interest in participating because it is not uncommon for students to reject invitations to play in the learning process. Then researchers such as Mayer (2009) and Cameron & Quinn (1999) discuss strategies to promote self-directed learning, which advocate for the use of game elements in learning to enhance engagement, motivation, and learning outcomes. By incorporating these principles, educators can create more dynamic and effective learning environments that resonate with modern learners. In this research, digital media such as Game-Based Quizizz can increase student motivation and learning outcomes because it is in line with modern learning.

While Institutions like the EDUCAUSE Learning Initiative and authors such as Bates (2015) discuss how technology can enhance accessibility and flexibility in learning, overall, this theory advocate for thoughtful integration of technology to foster inclusive, flexible and effective learning environments that cater to the diverse needs of today's learners. Of course, this Game-Based Quizizz is an effective medium for vocabulary learning. According to Wise (2018) the strategic use of data to foster continuous improvement in educational settings, aiming to optimize learning experiences and outcomes is through evidence-based decision making. Overall, all of the above theories conclude that Game-Based Quizizz can be used in today's learning to encourage engagement, increase motivation and optimize learning outcome data for students.

The use of Game-Based Quizizz can help the teacher in English Learning process. Basically, the use of media can attract students in learning process. It also provides information about an object and makes the situation of classroom evident. Teacher should use media because it is very useful for students to describe an object clearly (Lail, 2019). So, the students can get new situation, get motivation, inspiration and support to understand and master the vocabulary, students could several condition and make students' active in the class, be easier to understand and more enjoyable to learn than before. Besides, the result of pre-test showed the independent of student and raised the level of student in post-test after treatment cause their difficulties can encounter.

Moreover, the statement that had been stated on the second chapter of the research toward the use of Quizizz can improve students' vocabulary mastery at eleventh grade students of SMAN 2 Pujut same as the result of this research. In the same way implementing Quizizz as Game-Based learning in the classroom. Because the cloud vocabulary, making interference, content and effective to answer the question (Mei et al., 2018). This research aims to analyze students' vocabulary skills before and after using the Game-Based Quizizz method and media. This learning digital media is expected to improve students' mastery of English grammar, vocabulary and pronunciation. As the teacher, teacher can see the overall class performance on a particular quiz, once the quiz is over, we have got access and analyze reports. It easy to know the English skill of students. When a Quizizz game is over, you can review all the questions all at once, and you lose that isolation. (Medvedovska, et al., 2016). So, it could be concluded that the use of Game-Based Quizizz can improve students' vocabulary.

Meanwhile the data obtained, and the discussion presented in the previous chapter, learning using Game-Based Quizizz has a significant effect on students' vocabulary. Based on the average value of the Post-test group, there was significant progress shown by the experimental group it is from 30.71 to 68.06. student learning outcomes in the paired sample test showed significant value (α) = 0.00 > 0.05. So, the null hypothesis (H_0) which states "there is no significant effect of using Game-Based Quizizz in teaching vocabulary at eleventh grade students of SMAN 2 Pujut" is rejected.

The test results showed that the significance value (α) is lower than the value (0.00 > 0.05), meaning that the use of Game-Based Quizizz is effective. From these results, Game-Based Quizizz can be used in teaching vocabulary for students at SMAN 2 Pujut. This finding is similar to a research conducted by Nanda (2018) entitled "The use of Quizizz application in improving students' reading comprehension skill at SMKN 3 Takalar: An experimental research". The purpose of Nanda's research was to determine the influence of students' speaking at junior high school. The experiment involved 30 students; dependent variable is student's vocabulary mastery. Data were analyzed using SPSS version 24. This research found that the influence of Quizizz on students' vocabulary at SMPN 2 Mataram was significant. The results of the T-test also showed that the influence of the Quizizz in vocabulary was significant on students' skills because the t-table was higher

than t-count, (2.021 < -3.757), the average value of students also showed that there was a significant difference after implementing Quizizz. Based on the result above, it can be said that Quizizz can improve students' vocabulary. Rosalia (2023) also found that the use of media digital can improve students' speaking skill. Overall based on the result above, it can be concluded that in this research, Quizizz can improve students' vocabulary mastery through this Experimental class or Testing.

CONCLUSION

Based on the findings and the discussion of the data analysis, it can be concluded that the use of Game-Based Quizizz in English learning can improve students' vocabulary mastery among eleventh-grade students of SMAN 2 Pujut during the 2023-2024 academic year. Before using Quizizz, students' vocabulary mastery was relatively low, as evidenced by the mean pre-test score of 30.716. After the treatment, this improved to an independent level, with the mean post-test score rising to 68.065, which adequately supports this statement. The paired sample t-test results for class XI IPA 1, as shown in Table 3, indicate that the t-test value is higher than the t-table (6.481 > 2.046 and 22.808 > 2.046). Additionally, the test results show a significant effect, with a sig (2-tailed) of 0.00 for the pre-test and post-test with a degree of freedom (df = 30), and the sig (2-tailed) of the test is 0.01 ($\alpha < 0.00$). Therefore, the null hypothesis that "there is no significant effect of using Game-Based Quizizz in teaching vocabulary to eleventh-grade students of SMAN 2 Pujut" is rejected. The improvement is evident, as students' post-test scores were significantly better than their pre-test scores.

While the study demonstrated a significant improvement in vocabulary mastery using Game-Based Quizizz, further research could explore the long-term retention of vocabulary learned through game-based platforms. Additionally, future studies could investigate the effectiveness of Quizizz across different subjects or educational levels to determine whether similar improvements can be observed. Exploring students' engagement, motivation, and attitudes toward game-based learning could also offer deeper insights into how these tools can be optimized for educational success.

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