

## The Effectiveness of Using Quizizz Educational Game-Based Learning Media on the Learning Outcomes of Civil Engineering Students at the University of Muhammadiyah North Sumatra in the Subject of Kemuhammadiyah

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<b>Abstract</b>	
<p>This study aims to improve the learning score of Kemuhammadiyah courses by utilizing Quizizz educational games. The research is a quantitative study using the Quasi Experimental Design method of the Nonequivalent group pretest-posttest design type. The researcher will place the research subjects into two classes which are divided into experimental and control class categories. At the beginning of the learning activities, both classes will receive a pre-test. After that, the experimental class will be treated with the Kemuhammadiyah learning process using the Quizizz educational game-based learning method while the control class is given Kemuhammadiyah learning with the lecture method. In the final stage, both classes will be given a post-test. In the final stage, both classes will be given a post-test. The results of the analysis show that there is an effect on improving the learning outcomes of the Quizizz educational game-based learning method on student learning outcomes in Kemuhammadiyah learning in the experimental class. However, based on the results of research in both control and experimental classes, it can be concluded that there is no significant difference between the learning method based on Quizizz educational game-based learning method and conventional methods on student learning outcomes. This can be seen from the difference in results between the pre-test values of the control class and the experimental class by 3% and the difference in the results of the influence on the post-test value of the control and experimental classes by 2.58%.</p>	<p><b>Keywords:</b> Quizizz; Educational Game; Learning Outcomes; Kemuhammadiyah.</p>
<b>Abstrak</b>	
<p>Penelitian ini bertujuan untuk meningkatkan nilai belajar pada mata kuliah Kemuhammadiyah dengan memanfaatkan permainan edukatif Quizizz. Penelitian ini merupakan penelitian kuantitatif dengan menggunakan metode Quasi Experimental Design jenis Nonequivalent Group Pretest-</p>	<p><b>Kata Kunci:</b> Quizizz; Permainan Edukatif; Hasil Belajar; Kemuhammadiyah.</p>

Posttest Design. Peneliti akan membagi subjek penelitian ke dalam dua kelas, yaitu kelas eksperimen dan kelas kontrol. Pada awal kegiatan pembelajaran, kedua kelas akan diberikan pre-test. Setelah itu, kelas eksperimen akan mendapatkan perlakuan berupa pembelajaran Kemuhammadiyah menggunakan metode pembelajaran berbasis permainan edukatif Quizizz, sedangkan kelas kontrol diberikan pembelajaran Kemuhammadiyah dengan metode ceramah. Pada tahap akhir, kedua kelas akan diberikan post-test. Hasil analisis menunjukkan bahwa terdapat pengaruh positif terhadap peningkatan hasil belajar mahasiswa pada kelas eksperimen yang menggunakan metode pembelajaran berbasis permainan edukatif Quizizz. Namun demikian, berdasarkan hasil penelitian pada kedua kelas (kontrol dan eksperimen), dapat disimpulkan bahwa tidak terdapat perbedaan yang signifikan antara metode pembelajaran berbasis permainan edukatif Quizizz dengan metode konvensional terhadap hasil belajar mahasiswa. Hal ini terlihat dari perbedaan hasil nilai pre-test antara kelas kontrol dan eksperimen sebesar 3%, serta perbedaan hasil post-test antara kedua kelas sebesar 2,58%.

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## 1. Introduction

The Muhammadiyah Studies course is a compulsory university course classified as a General Course (MKU) that must be taken by every student studying at a Muhammadiyah educational institution. This course covers, among other things, material on renewal in Islamic thought, the background to the founding of Muhammadiyah, normative and operational foundations, and Muhammadiyah's social and community activities. This special university course not only aims to provide knowledge about the history of the Muhammadiyah Organization but also seeks to create an Islamic campus through the development of progressive Islamic ideas. However, the nature of the teaching material, which most students consider to be secondary learning that they do not need, has led to this course being neglected, resulting in low learning achievement scores.

An innovative learning approach that utilizes educational game-based media has the potential to increase the appeal and enjoyment of learning for students. When the learning process is considered interesting, students show a higher level of motivation to actively engage in learning tasks, which leads to potential improvements in academic achievement. This means that educational game-based learning does not make students passive recipients of knowledge; rather, they are actively involved in dynamic interactions that require participation. This active involvement plays an important role in facilitating better retention of subject matter. Educational game-based learning also provides other added value, such as encouraging effective cooperation and communication

between fellow students and lecturers, and providing immediate evaluation and feedback to students, enabling them to understand their mistakes and correct them quickly.

Educational games are games that are specifically created in the field of education. Educational games consist of several components such as sound, graphics, video, and animation (Tedja Saputra, 2001). The advantage of educational games is that they contain components that can improve memory, such as animations, enabling students to store and collect material in their memory for a longer period of time than using conventional educational methods (Vitianingsih, 2017). Quizizz is a game-based educational application that brings multiplayer activities to the classroom and makes learning in class more fun and interactive (Purba, 2019). Quizizz has the advantage that the questions presented in the Quizizz media have a time limit, teaching students to think accurately and quickly in answering the questions in the Quizizz media. Another advantage of Quizizz is that the answers to the questions are displayed in color and images and are visible on the teacher's computer (as the operator), and the students' roles will change automatically according to the order of the questions presented. Therefore, it can be concluded that Quizizz is an educational game-based learning medium that contains interactive quizzes. Quizizz can be used in learning activities such as pre-tests, post-tests, and practice questions, material reinforcement to measure student understanding, remedial lessons, homework, and so on. Uniquely, Quizizz's answer choices feature varied images and colors.

The Quizizz educational game platform has gained recognition in the international education world by winning the 2022 Digital Education Awards as the winner of the Digital Classroom Aid of the Year category. Quizizz has also obtained the Trust Education Application Certified certificate. This digital education application is trusted by over 90% of teachers in schools across the United States. In Indonesia, this educational application is also widely used by teachers and lecturers to enhance learning effectiveness and increase student engagement from elementary school through higher education.

This study is supported by research conducted by Wihartanti, et al. (2019), which also states that there is a significant difference between classes that use the Quizizz smartphone-based application and classes that use the conventional model in their learning process. Learning using the Quizizz application is also able to foster critical thinking skills. Similar research has been conducted by Citra and Rosy (2020), which concluded that the use of Quizizz educational game-based learning media effectively improves student learning outcomes in the Office Technology subject for grade X OTKP at SMK Ketintang Surabaya. Therefore, with the background of the problems in the Muhammadiyah Studies course that the author has described above and reviewing previous similar research on the benefits of Quizizz educational games in improving student learning outcomes, the researcher wanted to find out more about whether Quizizz educational games could be effective in improving learning outcomes in the Muhammadiyah Studies course for civil engineering students at the University

of Muhammadiyah, North Sumatra. Therefore, this study is entitled: The Effectiveness of Using Quizizz Educational Games as a Learning Medium on the Learning Outcomes of Civil Engineering Students at the University of Muhammadiyah North Sumatra in the Kemuhammadiyah Course.

## 2. Methods

This research is quantitative research using a Quasi-Experimental Design method with a Nonequivalent group pretest-posttest design. The researcher will place the research subjects into two classes, which are divided into experimental and control classes. At the beginning of the learning activity, both classes will take a pretest. After that, the experimental class will be given the Muhammadiyah learning process treatment using the Quizizz educational game-based learning method, while the control class will be given Muhammadiyah learning using conventional methods. At the final stage, both classes will be given a final test (post-test) to conclude the learning process. This treatment will be given three times during the meetings. The research design is formulated as follows:

### *Research Design*

Kelompok	Pretest	Perlakuan	Posttest
Eksperimen	O1	X	O2
Kontrol	O3	-	O4

Explanation:

O1 pre-test for the experimental class O2 post-test for the experimental class O3 pre-test control class

O4 post-test control class

X treated with Quizizz educational game

- not given the Quizizz game

## 3. Result and Discussion

This research was conducted at the University of Muhammadiyah North Sumatra, carried out on November 30, 2025, December 5, and December 12, 2024. In the initial stage of the research, the researcher first created a test instrument that had been tested for validity and reliability using SPSS (Statistical Package for the Social Sciences). After the instrument was tested, it could be used as a measuring tool for learning outcomes through the Quizizz educational game-based learning method. The descriptive statistics of the pre-test and post-test data for learning outcomes through the Quizizz educational game-based learning method in the experimental class and the conventional method in the control class can be seen below:

Table 1.  
Descriptive Statistics

N	Minimum	Maximum	Mean	Std. Deviation

Experimental Pretest	12	30	67	52.00	11.607
Experimental Posttest	12	80	97	89.25	6.151
Control Pretest	12	33	90	58.00	18.101
Posttest Control	12	63	100	84.08	12.508
Valid N (listwise)	12				

If the data is broken down, it can be seen that the pre-test data for learning outcomes through the Quizizz educational game-based learning method in the experimental class and the conventional method in the control class can be seen as follows:

Table 2. Pre-test Results

Group	Test	Number Students (N)	Score Lowest	Score Highest	Average
Experiment	Pre-Experiment	12	30	67	52.00
Control	Pre-Con	12	33	90	58.00

Meanwhile, the post-test data for learning outcomes through the Quizizz educational game-based learning method in the experimental class and the conventional method in the control class can be seen as follows:

Table 3. Post-test Results

Group	Test	Total Students (N)	Score Lowest	Score Highest	Average
Experiment	Post-Experiment	12	80	97	89.25
Control	Post-Con	12	63	100	84.08

In this study, the Kolmogorov-Smirnov test was used to determine whether the data was normally distributed or not. The criteria for testing data normality are that if the significance value  $\alpha$  is  $> 0.05$ , then the data is normally distributed, whereas if the significance value  $\alpha$  is  $< 0.05$ , then the data is not normally distributed. The results of the data normality test can be seen in Table 4 below:

Table 4. Tests of Normality

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
Class		Statistic	df	Sig.	Statistic	df	Sig.
Student Learning Outcomes	Pre-test Experiment (Quizizz)	.152	12	.200*	.929	12	.370

	Post-Test Experiment (Quizizz)	.146	12	.200*	.911	12	.220
	Pre-Test Control (Lecture)	.130	12	.200*	.943	12	.540
	Post-Test Control (Lecture)	.182	12	.200*	.917	12	.264

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the above output, it is known that the significance value (Sig) for all data in both the Kolmogorov-Smirnov test and the Shapiro-Wilk test is  $> 0.05$ , so it can be concluded that the research data is normally distributed. The data in the table shows that in the Kolmogorov-Smirnov test, the sig. Experimental Pre-test  $0.20 > 0.05$ , and the sig. value for the Experimental Post-test is  $0.20 > 0.05$ , so it is declared to be normally distributed. Then, for the Control class, it can be seen that the sig. value for the Control Pre-test is  $0.20 > 0.05$  and the sig. value for the Control Post-test is  $0.20 > 0.05$ , so it can be stated that the data is normally distributed. For the Shapiro-Wilk test, the data is declared to be normal because the sig. value for the Experimental Pre-test is  $0.20 > 0.05$  and the sig. value for the Experimental Post-test is  $0.20 > 0.05$  and the sig. value for the Experimental Post-test Control is  $0.20 > 0.05$ , so the data can be declared normally distributed. In the Shapiro-Wilk test, the data is declared normal because the sig. value of the Pre-test Experiment is  $0.370 > 0.05$ , the sig. value of the Post-test Experiment is  $0.220 > 0.05$ , the sig. value Pre-test Control sig. value of  $0.540 > 0.05$  and Post-test Control sig. value of  $0.264 > 0.05$ , all sig. values  $> 0.05$  and the data is declared to be normally distributed.

The paired sample t-test is a test of two paired samples and is one of the testing methods used to assess the effectiveness of treatment, characterized by a difference between the mean before and after treatment. The basis for accepting or rejecting  $H_0$  in the Paired Sample T-Test is if the sig. value is  $> 0.05$ , then  $H_0$  is accepted, and if the sig. value is  $< 0.05$ , then  $H_0$  is rejected. The results of the Paired Samples T-test can be seen in Table 5 below:

Table 5. Paired Samples Test

Paired Differences					t	df	Sig. (2-taile)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			

Pair 1	Pre-test Experiment (Quizizz) - Post-test Experiment (Quizizz)	-37.250	8,895	2,568	-42,901	-31,599	-14,507	11	.000
Pair 2	Pre-test Control (Lecture) - Post-test Control (Lecture)	-26,083	13,648	3,940	-34,755	-17,412	-6,620	11	.000

Based on the output of Pair 1, a sig. (2-tailed) value of  $0.000 < 0.05$  was obtained, so it can be concluded that there is a difference in the average learning outcomes of students for the pre-test of the Experiment with the post-test of the Experiment class in the Quizizz educational game-based learning method. Based on the Pair 2 output, a sig. value (2-tailed) of  $0.000 < 0.05$  was obtained, so it can be concluded that there is a difference in the average learning outcomes of students for the Control pre-test and the Control class post-test using the lecture or conventional method.

The homogeneity test used was the Levene Test, where the test criteria were that if the sig. value was  $> 0.05$ , the data was declared omogeneous, and if the sig. value was  $< 0.05$ , the data was declared non-omogeneous. The summary of the homogeneity test results can be seen in Table 6:

**Table 6. Test of Homogeneity of Variances**

		Levene Statistic	df1	df2	Sig.
Pretest	Based on Mean	2.322	1	22	.142
	Based on Median	1.957	1	22	.176
	Based on Median and with adjusted df	1.957	1	17.901	.179
	Based on trimmed mean	2.226	1	22	.150

Based on the data in Table 6, a sig value of  $0.150 > 0.05$  was obtained, so it can be concluded that the research sample data has homogeneous variance. It can be concluded that the data comes from a population with the same variance and can be continued with the next test, namely the hypothesis test.

#### Group Statistics

Class	N	Mean	Std. Deviation	Std. Error Mean
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Student Learning Outcomes	Post-test of the Experimental Class (Quizizz)	12	89.25	6.151	1,776
	Post-test Control Class (Lecture)	12	84.08	12,508	3,611

Based on the descriptive statistical results of the mean above, it can be seen that there is no significant difference between the of learning outcomes using the Quizizz educational game-based learning method and the learning outcomes using the lecture method in Kemuhammadiyah learning.

### Independent Samples Test

Levene's Test for Equality

Variances

t-test for Equality of Means

		Sig.	Sig. (2-tailed)	Mean Difference	Std. Error of the Difference	95% Confidence Interval of the Difference				
						Lower	Upper			
Student Learning Outcomes	Equal variances assumed	11.420	.003	1.284	22	.212	5,167	4,024	-3,178	13,511
	Equal variances not assumed			1,284	16,027	.217	5,167	4,024	-3,362	13,695

Based on the above output, the Sig. (2-Tailed) value is  $0.217 > 0.05$ , so it can be concluded that there is no difference in learning outcomes using the Quizizz educational game-based learning method and learning outcomes using the conventional method in Muhammadiyah education.

### 4. Conclusion

Based on the discussion of output pair 1, it can be concluded that there is an effect on the improvement of learning outcomes using the Quizizz educational game-based learning method on student learning outcomes in Muhammadiyah studies. However, based on the research results, it can be concluded that there is no significant difference between the Quizizz educational game-based learning method and the conventional method in terms of student

learning outcomes. This can be seen from the difference in results between the pre-test scores of the control class and the experimental class, which was 3%, and the difference in the effect on the post-test scores of the control class and the experimental class, which was 2.58%.

## 5. Bibliography

- Citra, C. A., & Rosy, B. (2020). Keefektifan penggunaan media pembelajaran berbasis game Quizizz terhadap hasil belajar teknologi perkantoran siswa kelas X SMK Ketintang Surabaya. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, 8(2), 261–272.
- Dimiyati, & Mudjiono. (2010). *Belajar dan pembelajaran*. Jakarta: PT Rineka Cipta.
- Nurrita, T. (2018). Pengembangan media pembelajaran untuk meningkatkan hasil belajar peserta didik. *Jurnal Misykat*, 3(1).
- Purba, L. S. L. (2019). Peningkatan konsentrasi belajar mahasiswa melalui pemanfaatan evaluasi pembelajaran Quizizz pada mata kuliah Kimia Fisika I. *Jurnal Dinamika Pendidikan*, 12(1), 29.
- Quizizz. (2024). *Quizizz*. Diakses pada 5 Agustus 2024, dari <https://quizizz.com/>
- Rosy, B. (2013). *School based management: Keefektifan kurikulum pembelajaran ekonomi di SMA Negeri 3 Madiun*. *Jurnal Pendidikan Ekonomi*, 3(1).
- Sadiman, A. S., Rahardjo, R., Haryono, A., & Hardjito. (1986). *Media pendidikan: Pengertian, pengembangan, dan pemanfaatannya*. Jakarta: CV Rajawali.
- Setiawan, H. R. (2018). *Media dan sumber belajar*. Bildung.
- Setiawan, H. R., & Abrianto, D. (2020). *Menjadi pendidik profesional* (Ed. Rizka Harfiani). Medan: UMSU Press.
- Sugiyono. (2016). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta.
- Teja Saputra, M. S. (2021). *Bermain, mainan, dan permainan*. Jakarta: Grasindo.
- Vega Vitianingsih. (2017). Anak, game edukasi sebagai media pembelajaran pendidikan anak usia dini. *Jurnal Inform*, 1(1). <https://doi.org/10.25139/inform.v1i1.220>
- Wijayanto, E. (2017). Pengaruh penggunaan media game edukasi terhadap hasil belajar IPA siswa kelas IV SDN Kajartengguli Prambon Sidoarjo. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, 5(3).