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Student Learning Outcomes: Innovative Learning with an Experimentation Blended Learning Model

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Abstract: This study aims to evaluate the effectiveness of using a blended learning model in improving students' learning outcomes in Islamic Education at SMA Negeri 1 Katibung. The research followed a quantitative approach with an experimental design and a post-test only control group method. The sample included two classes: a control group using traditional teaching methods and an experimental group applying the blended learning model. A multiple-choice test, which was validated for reliability and validity, was used to assess students' learning outcomes after the treatment. The data collected was analyzed using a t-test to compare the learning outcomes between the groups. Normality tests for both groups showed that the data followed a normal distribution, with a significance value of 0.060 (greater than 0.05). Homogeneity tests confirmed the data was homogeneous, with a significance value of 0.212 (greater than 0.05). The t-test results, including Levene's Test for Equality of Variances, indicated a significance value of 0.113 (greater than 0.05). Based on these results, it was concluded that the Quizizz-based blended learning model did not have a significant impact on students' learning outcomes, suggesting that the model was not effective.

Keyword: Blended Learning; Quizziz; Learning Outcomes

Abstrak: Penelitian ini bertujuan untuk mengevaluasi efektivitas penggunaan model pembelajaran blended learning dalam meningkatkan hasil belajar siswa di bidang Pendidikan Agama Islam (PAI) di SMA Negeri 1 Katibung. Penelitian ini menggunakan pendekatan kuantitatif dengan desain eksperimen dan metode post-test only control group. Sampel penelitian terdiri dari dua kelas: kelas kontrol yang menggunakan metode pengajaran tradisional dan kelas eksperimen yang menerapkan model pembelajaran blended learning. Tes pilihan ganda yang telah divalidasi untuk reliabilitas dan validitasnya digunakan untuk mengukur hasil belajar siswa setelah perlakuan diberikan. Data yang dikumpulkan dianalisis menggunakan uji t untuk membandingkan hasil belajar antara kedua kelompok. Uji normalitas untuk kedua kelompok menunjukkan bahwa data mengikuti distribusi normal dengan nilai signifikansi 0,060 (lebih besar dari 0,05). Uji homogenitas mengonfirmasi bahwa data bersifat homogen dengan nilai signifikansi 0,212 (lebih besar dari 0,05). Hasil uji t, termasuk Uji Levene untuk Kesetaraan Varians, menunjukkan nilai signifikansi 0,113 (lebih besar dari 0,05). Berdasarkan hasil tersebut, dapat disimpulkan bahwa model blended learning berbasis Quizizz tidak memberikan dampak signifikan terhadap hasil belajar siswa, yang menunjukkan bahwa model ini tidak efektif.

Kata Kunci: *Blended Learning; Quizziz;* Hasil Belajar

INTRODUCTION

Education is a conscious effort made by an individual to acquire knowledge, develop skills, and hone the potential within oneself (Asfar & Asfar, 2020). Education plays an important role in the survival of humanity. The quality of education determines the progress of a nation and produces outstanding individuals who can

compete globally. Education is not always about the place or the school, but good education is one that achieves the goal of creating a generation of successors who are qualified, a generation that possesses both knowledge and good character (Hafeez, 2021; Hutasoit et al., 2024; Mulisyono, 2020; Ujud et al., 2023; Verma et al., 2023).

An essential element of education is the learning process, which involves interactions among educators, students, and various learning resources within the educational environment. Evaluating students' performance in learning activities is vital, as learning outcomes play a key role in measuring both students' success and the attainment of educational objectives (Nailatur Rohmah et al., 2024; Yandi et al., 2023).

Learning outcomes are the abilities acquired by students from the learning activities they have undertaken, covering three aspects: cognitive, which represents knowledge and skills; affective, which represents feelings and attitudes; and psychomotor, which represents physical performance. (Fai et al., 2020; Namoun & Alshanqiti, 2021; Sewagegn, 2020). The categories of cognitive dimensions in Bloom's taxonomy encompass six aspects, which include C1 (remembering), C2 (understanding), C3 (applying), C4 (analyzing), C5 (evaluating), and C6 (creating) (Yüceer, 2022). The learning outcomes for Islamic Religious Education at the high school level, as outlined in the Minister of Education and Culture Regulation No. 24 of 2016, include the following competencies: (1) social attitudes, (2) core knowledge competencies, where students are expected to understand, apply, and analyze factual, conceptual, procedural, and metacognitive knowledge driven by their curiosity in science and technology, and (3) skills that enable students to effectively acquire and use knowledge (Khairial et al., 2022).

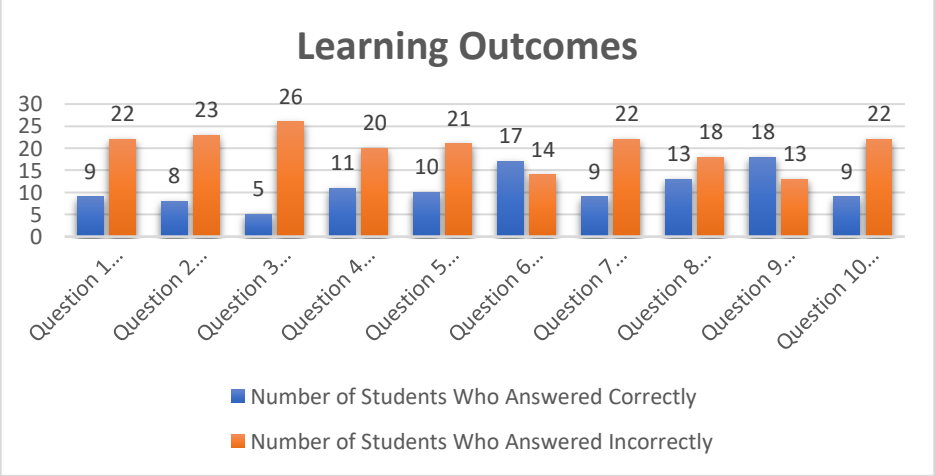

Figure 1. Graph of Students' Learning Outcomes

The data shows that the cognitive levels C1-C6 are still low, with more than 50% of students providing incorrect answers. The focus of this study is on C1, C3, C4, C5, and C6, while the researcher did not focus on the cognitive level C2, as the data for C2 is considered to meet the needs of students at the school. Based on the results of a pre-study involving observations and interviews with one of the Islamic Education teachers at SMA Negeri 1 Katibung, several issues emerged in the implementation of Islamic Education learning. Some of the identified problems include: 1) suboptimal use of resources, 2) time limitations in classroom teaching activities, and 3) lack of active student participation, which suggests that conventional learning methods may

be less effective in fostering active student participation. As a result, students face challenges such as low learning outcomes and a lack of interest in the learning process. Data from the field indicates that students' scores are still relatively low and have not yet reached the minimum mistery criteria (MMC) in Islamic Education subjects. This indicates the need for adopting an effective teaching model to improve students' learning outcomes.

To improve students' learning outcomes, a teaching model is needed that encourages students to actively engage (Ningsih, 2023) also, independent learning so that it can accommodate learning styles and preferences (Arifin et al., 2024). One of the efforts that can be made to overcome the challenges in the learning process is by creating an innovative teaching model that is relevant to technological developments (Firdos et al., 2023; Saiful Rizal, 2023). Blended learning is one teaching model that can be implemented. This approach incorporates information and communication technology into diverse teaching strategies, fostering a conceptual learning process that is adaptable to various disciplines (Islam et al., 2024). This teaching model has the potential to transform traditional learning by enabling students to explore knowledge independently beyond the classroom. It can be applied through a combination of in-person and online learning, integrating technology, which makes it flexible and helps maximize the limited classroom time (Adhi et al., 2022; Syahrawati et al., 2022; Hafeez, 2021; Kumar et al., 2021; Topping et al., 2022)

To effectively implement the blended learning model, an application that aids in learning activities is essential. One such application is Quizizz, this app allows teachers to integrate learning material and conduct assessments or evaluations of students, providing immediate feedback. With its engaging features, Quizizz encourages greater interaction among students. It is also one of the simplest tools to incorporate gamification strategies into teaching (Damayanti et al., 2022; Escamez & Tapia, 2021; Novia Rizki & Kurniawati, 2022; Riki et al., 2023; Syafriafdi., 2023).

Studies conducted by the researcher and other experts, such as Basori, Nuril Huda, H. Nurhikmah, R. Mursid, and Eka Yulia Syahrawati, highlight the potential of the blended learning model in enhancing learning activities and improving students' learning outcomes (Basori et al., 2023; Syahrawati et al., 2022; Huda et al., 2022; Mursid et al., 2022; Nurhikmah et al., 2023) The advantage of the blended learning model is its use of technology, which is packaged in an interactive and engaging way, and offers flexibility in time, location, and cost, allowing the material to be accessed wherever the students are (Faustino & Kaur, 2021; Hafeez & Akhter, 2021; Rasheed et al., 2020).

The innovation in this study lies in applying a blended learning model using the Quizizz app. By incorporating Quizizz as an interactive tool, the researcher combines technology with learning activities. This method aims to foster active student engagement in Islamic Religious Education (IRE) and encourage independent learning, which may impact their academic performance. While many studies have explored blended learning in education, there is limited research in the context of IRE. The gap in research is the insufficient exploration of how combining face-to-face instruction with the Quizizz app can improve IRE learning outcomes at the high school level.

This study is essential for analyzing the specific effects of the blended learning model on students' academic performance in Islamic Religious Education (IRE). It also investigates the relationship between technology integration in learning and

conventional teaching methods, aiming to enhance the understanding and application of religious values in daily life. Furthermore, the study serves as a basis for future research on innovative and contemporary teaching models. Without this research, opportunities to identify and maximize the use of technology in improving the effectiveness of IRE learning may be overlooked.

METHODS

This study employs a quantitative approach with an experimental design, specifically utilizing a quasi-experimental method with a post-test only control-group design. Participants are divided into two groups: the experimental group, which receives the treatment, and the control group, which follows conventional methods. The primary aim is to compare the learning outcomes between these groups.

The study population consists of all grade XI students at SMA Negeri 1 Katibung during the 2024/2025 academic year, totaling 265 students across seven classes. The sample includes class XI 2 as the experimental group implementing the blended learning model and class XI MIPA 4 as the control group using traditional teaching methods. A probability sampling technique, specifically simple random sampling, is employed to ensure each individual in the population has an equal chance of selection. The samples are chosen randomly based on criteria aligned with the research objectives.

Data collection was carried out using a multiple-choice test as the instrument. Prior to administering the test, the researcher had the questions validated by experts. A pilot test was carried out with a different group, separate from the experimental and control groups, to evaluate the instrument's reliability and validity. Out of the 18 trial questions, 11 were found to be valid and were subsequently used in both groups to assess learning outcomes.

RESULT AND DISCUSSION

In this study, the researcher selected the topic 'The Exemplary Figures of Scholars in Indonesia' for grade XI to explore the differences between the class that received a special treatment using the blended learning model and the control class that used the conventional teaching model. This topic was selected because it aligns with the blended learning model, allowing students to access learning materials both in the classroom and anywhere else, especially given the extensive content. The study was conducted over four sessions: three sessions focused on applying the blended learning model in the experimental class and the conventional teaching model in the control class, followed by a final session dedicated to the post-test to assess students' learning outcomes after completing the lessons.

This study employed a multiple-choice test instrument to measure students' learning outcomes. Prior to distributing the questions, the researcher evaluated the research instrument through validity testing and assessed the reliability of the data to determine the extent to which the instrument demonstrated precision, accuracy, stability, and consistency in revealing specific phenomena within a group of individuals, even when tested at different times. The data were obtained from 18 questions that had undergone construct validation, which were then administered to a trial class. The results of this data were subsequently subjected to validity and

reliability tests to ensure that the validated and reliable instruments could be used in both the control and experimental classes. The detailed results of the validity and reliability tests are presented in the table below.

Table 1. Description of the Validity Test Result

No. Question	$R_{Calculated}$	R_{table}	Description
1	0,3061	0,757	Valid
2	0,3061	0,112	InValid
3	0,3061	0,268	InValid
4	0,3061	0,743	Valid
5	0,3061	0,757	Valid
6	0,3061	0,729	Valid
7	0,3061	0,750	Valid
8	0,3061	0,740	Valid
9	0,3061	0,284	InValid
10	0,3061	0,722	Valid
11	0,3061	0,189	InValid
12	0,3061	-0,093	InValid
13	0,3061	0,742	Valid
14	0,3061	0,749	Valid
15	0,3061	0,729	Valid
16	0,3061	0,745	Valid
17	0,3061	-0,026	InValid
18	0,3061	0,298	InValid

Table 2. Description of the Reliability Test Result

Reliability Statistics

Cronbach's Alpha	N of Items
,760	11

The results of the validity and reliability analysis indicate that, out of the 18 items tested, 11 items meet the validity criteria, demonstrating accuracy in measurement. These items also exhibit good reliability, with a Cronbach's Alpha value of 0.760, which is higher than the minimum threshold of 0.60. This suggests that the instrument has stability and consistency in measuring what it is intended to measure. With a calculated value of $R_{calculated} > R_{table}$, it can be concluded that the instrument is valid and reliable for use in research or learning evaluation. Therefore, in this study, the instrument is suitable and can be administered to both the experimental and control groups. The interpretation results are as follows:

Prerequisite Test

1) Normality Test

In this study, the Shapiro-Wilk method was used to test the normality of the post-test data, as the sample size was less than 100 students. The data is deemed normally distributed if the significance value (Sig.) exceeds 0.05, while a Sig. value below 0.05 indicates non-normal distribution. The normality test results for the post-test data from both the experimental and control groups are presented below.

Table 3 . Normality Test Result

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelompok	Statistic	df	Sig.	Statistic	df	Sig.
Hasil Belajar	1	,175	30	,020	,933	30	,060
	2	,171	33	,016	,965	33	,362

a. Lilliefors Significance Correction

The data presented in the table shows that the significance value for the experimental class is 0.060, which is above 0.05, while the significance value for the control class is 0.362, also greater than 0.05. This suggests that the post-test data for both classes follow a normal distribution, as the significance values for both exceed 0.05, based on the Shapiro-Wilk test.

2) Homogeneity Test

The homogeneity test aims to check whether the variances between research populations are similar. In this study, the Bartlett test was used to evaluate homogeneity. The data is classified as homogeneous if the significance value exceeds 0.05 and non-homogeneous if it falls below 0.05. The analysis was performed using the SPSS 25 for Windows application, with the results presented as follows.

Table 4. Homogeneity Test Result

		Levene Statistic	df1	df2	Sig.
Hasil Belajar	Based on Mean	1,590	1	61	,212
	Based on Median	1,491	1	61	,227
	Based on Median and with adjusted df	1,491	1	60,813	,227
	Based on trimmed mean	1,430	1	61	,236

Based on the results of the homogeneity test, the significance value is 0.212 > 0.05. Therefore, the researcher concludes that the data is homogeneous or has the same value. It can be stated that the post-test data has a similar or homogeneous population, as the significance value is 0.212 > 0.05.

3) Hypothesis Test

The hypothesis test used in this study is the Independent Sample t-test. The purpose of this test is to evaluate the final performance of the sample. It is used to determine if there are significant differences between two separate groups: one that receives a particular treatment and the other that does not.

Table 5. Independent Sample Test Result

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Belajar	Equal variances assumed	1,017	,317	1,608	61	,113	1,1000	,6842	-,2681	2,4681
	Equal variances not assumed			1,596	57,345	,116	1,1000	,6894	-,2803	2,4803

According to the data analysis, the Levene's Test for Equality of Variances shows a Sig. (2-tailed) value of 0.113, which is greater than 0.05. Based on the decision rule for the Independent Sample t-test, the criterion is: if $|t_{hitung} \leq t_{table}|$, then is accepted. Therefore, it can be concluded that if $|t_{hitung} \leq t_{table}|$, H_0 is rejected.

DISCUSSION

Blended learning is a teaching method that integrates information and communication technology with diverse instructional strategies across various subjects. (Puspitarini, 2022) This teaching model can be applied through a combination of face-to-face instruction and online learning supported by technology integration (Anthony et al., 2022) therefore, it can be considered flexible as it maximizes the limited learning time in the classroom. Through the blended learning model, students can access the material wherever they are.

In this study, the blended learning model is facilitated through the use of the Quizizz application, aligning with the key components of blended learning, which include face-to-face learning, independent learning, application usage, and evaluation (Wulandari et al., 2024). Quizizz offers various engaging features, with integration into the learning material, which helps students to review and reinforce the material they have learned (Supriadi et al., 2021). Below are the results from 5 quiz questions that the researcher provided to the students.

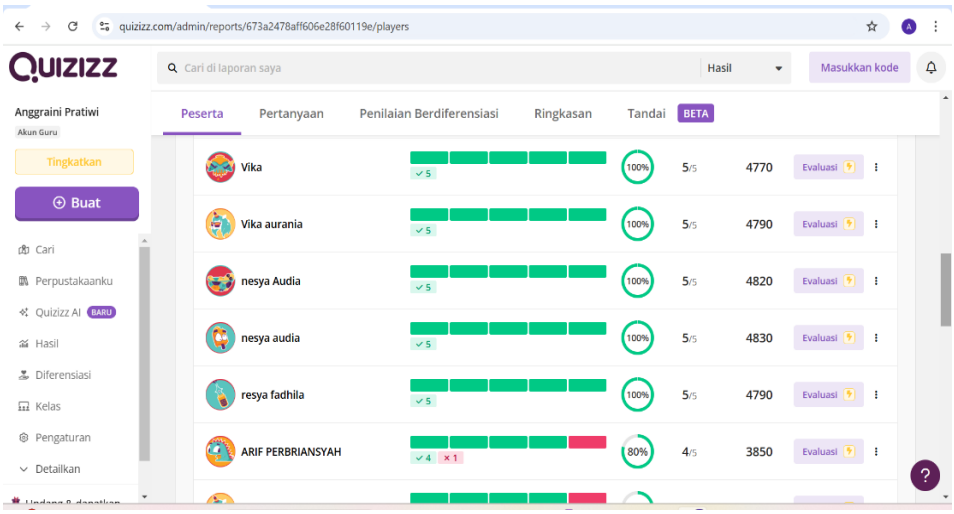

Figure 2. The results of the students' quiz on the Quizziz application.

The post-test results from two classes, comprising the experimental and control groups, were based on 13 multiple-choice questions aimed at evaluating students' learning outcomes after the learning process. A total of 63 students participated in the test. The data gathered from the multiple-choice test showed variations in students' learning outcomes in the Islamic Religious Education subject. The post-test data was analyzed using the Independent Sample t-test.

The results of the tests conducted are as follows: The normality test for both the experimental and control groups shows that the data is normally distributed, with a significance value of 0.060, which is greater than 0.05. The homogeneity test indicates that the data is homogeneous, with a significance value of 0.317, also greater than 0.05. Additionally, the T-test results show a significance value of 0.113 for Levene's Test

for Equality of Variance, which is greater than 0.05. Based on these findings, it can be concluded that the blended learning model using the Quizizz application does not significantly affect students' learning outcomes.

The learning outcomes in this study may not be effective, possibly not due to the teaching model applied by the teacher, but rather because the learning resources were not maximally utilized, along with the influence of the school environment, students' motivation, and interest in learning (Yandi et al., 2023) Additionally, students' lack of concentration during the teacher's explanation of the material, as well as external factors such as an uncomfortable classroom environment, may also contribute (Oktaviani et al., 2020) Furthermore, factors such as students' independence in learning, family background, and the community environment can also play a role in affecting learning outcomes (Nabillah & Abadi, 2019; Ridho'i, 2022).

Based on the research conducted by Abdul Hamid, the effectiveness of the blended learning model based on the Quizizz application showed significant results. According to the table for equal variances assumed, the Sig. value obtained was 0.001 < 0.05. (Hamid et al., 2023) Meanwhile, the results of this study show insignificant data, where the T-test results have a Levene's Test for Equality of Variance significance value of 0.113 > 0.05. The difference lies in the dependent variables; Abdul Hamid's study used interest, outcomes, and students' independence in learning. The research instruments used in his study were questionnaires and questions. In contrast, this study only used learning outcomes as the dependent variable, and multiple-choice questions as the test instrument.

The study conducted by Livia Hesti Parante highlights the effect of the blended learning model on students' learning outcomes. The results show that blended learning significantly enhances students' speaking abilities, especially in the area of greetings. This is reflected in the higher average scores of the experimental group (85.5) compared to the control group (45.35). Therefore, it can be concluded that the blended learning model has a notable impact on improving students' English speaking skills, particularly in greetings. (Parante et al., 2022). The difference between this study and the proposed one lies in the area of focus: this study investigates English language learning, while the proposed study will focus on Islamic Religious Education (IRE). The results of this study did not show any significant impact of the blended learning model on students' IRE learning outcomes.

The research conducted by Yuliati examines the impact of the blended learning model on students' learning outcomes, comparing it with the non-blended learning model, especially in terms of their learning styles. The analysis showed an FA value of 7.010 and a significance value of 0.011, which is below the threshold of 0.05. This suggests a notable difference in the learning outcomes between students who were taught using blended learning and those who were taught using traditional methods (Yuliati et al., 2023). The difference from previous studies lies in its focus on learning outcomes. The results of this research show that the blended learning model does not significantly impact students' learning outcomes in Islamic Education (IRE).

This study aims to evaluate the effectiveness of the blended learning model in enhancing students' learning outcomes in Islamic Education (IRE). The data analysis reveals that there is no significant difference in the learning outcomes between students who were taught with the blended learning model and those who were taught using the traditional method. This is shown by the average scores of both groups, with a significance value of 0.113, which is greater than the significance level of 0.05.

Possible factors influencing this result include underused learning resources, lack of focus during lessons, students' motivation and interest, and external factors like uncomfortable classroom conditions, the school environment, and the wider community setting.

Additionally, observations during the study showed that most students tended to be passive during group discussions in class. The lack of initial training on the learning system, as well as individual interest in learning, also contributed to the challenges in implementing this learning model. In addition, the blended learning model faces several challenges in its implementation, such as limited internet access, which hindered students' full participation in learning activities. Another issue teachers encounter is motivating students to understand the value of learning, both inside and outside of school.

Hence it is essential for educators to guide students about the learning system being used. This result shows that while the blended learning model can enhance student engagement, its success in improving learning outcomes depends on adequate support and proper time management. As a result, the researcher recommends that teachers consider students' preparedness before introducing innovative, technology-integrated learning models.

CONCLUSION

Based on the research findings, the use of the Quizizz-based blended learning model on student learning outcomes showed that the Levene's Test for Equality of Variances yielded a Sig. (2-tailed) value of 0.113, which is higher than 0.05, according to the T-test results. As a result, it can be concluded that the hypothesis is both accepted and rejected, meaning that the Quizizz-based blended learning model does not significantly improve the learning outcomes of grade XI students at SMA Negeri 1 Katibung.

Future research could explore further development of technology-based learning models by using different applications that foster active student participation, thereby enhancing the desired learning outcomes. This should be adapted to accommodate various student learning styles and incorporate training to improve students' technological skills. Moreover, external factors such as motivation, infrastructure support, and the use of a combined approach integrating technology with other teaching methods should also be considered. Additionally, replicating the study in different settings or populations is important to determine whether the results are specific to the context.

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