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THE EFFECT OF *PROBLEM-BASED LEARNING* MODEL BASED ON QUIZIZZ MEDIA ON ICT LEARNING OUTCOMES OF GRADE V STUDENTS

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ABSTRACT

In preliminary observations on March 5, 2024 at SDIT Ar-Rahmah Makassar city, there are still many students who have difficulty understanding the material taught in the learning process marked by the low learning outcomes of ICT students. This study aims to analyze the effect of Problem Based Learning learning model based on Quizizz media on ICT learning outcomes of fifth grade students of SDIT Ar-Rahmah Makassar City. The type of research used is the experimental method. The results showed that the Pretest and Posttest data were normally distributed with a Kolmogorov-Smirnov significance value of 0.167 and Shapiro-Wilk of 0.359. In addition, the homogeneity test results showed that the data had a homogeneous variance with a Levene Statistics significance value of 0.017. Based on the t-test results, there is a difference between the Pretest and Posttest scores, which shows that the Problem Based Learning learning model based on Quizizz media has an effect on student ICT learning outcomes. The average Pretest score of 7.38 increased to 10.31 on the Posttest. These results indicate an increase in student understanding after the application of this learning model. It can be concluded that this model is effective in improving learning outcomes and can encourage students to be more active in the learning process, increase their involvement in understanding the material and provide a more interesting and interactive learning experience.

1. INTRODUCTION

Education has an important role in the development of the Indonesian nation, besides that education is also an important means to improve the quality of human resources (HR) in ensuring the progress of a nation and state (Alannasir & Selvi, 2018). Education is essentially an effort to facilitate individuals in achieving their fullest potential as human beings. Through education, a person can make constructive contributions to society and help build a better future. Education is also an intentional process aimed at transforming knowledge, skills, and ethical values. This transformation benefits not only the individual but also society, the nation, the state, and their respective religious beliefs. Education is essentially one of the things to influence students so that they are able to adapt themselves as well as possible to the surrounding environment (Afriandini et al., 2024).

This aligns with the conceptualization of education articulated in Law Number 20 of 2003 concerning the National Education System. Education is a deliberate and systematic effort aimed at fostering a conducive learning environment and facilitating the educational process, thereby enabling learners to actively develop their inherent potential. This includes spiritual resilience, self-regulation, character development, cognitive sharpness, noble ethics, as well as the competencies required for personal, social, national, and governmental benefit (UUD No. 20, 2003). Education holds great significance for humanity, as it profoundly influences social dynamics and the evolution of civilization.

Indonesia encompasses numerous educational institutions rooted in Islamic principles, including madrasahs, integrated Islamic educational institutions, pesantrens, and various Islamic private schools. In the field of primary education (elementary schools), Indonesia currently implements the Merdeka Curriculum, which requires students to possess proficient problem-solving abilities. The emphasis on problem-solving in the Merdeka Curriculum represents one of the core competencies developed to address the demands of the 21st century. This curriculum highlights a more adaptable learning approach focused on enhancing advanced cognitive skills, particularly those related to problem-solving (Sinaga et al., 2024).

One of the educational institutions that has adopted the Merdeka Curriculum is SDIT Ar-Rahmah, located in Makassar City. The implementation of the Merdeka Curriculum is expected to enhance students' autonomy in their educational activities and is projected to foster a generation characterized by creativity and innovation, thereby equipping them to face future challenges. However, in practice, many obstacles still need to be addressed in the implementation of the Merdeka Curriculum within this institution.

Based on the findings from the observation conducted on March 5, 2024, at SDIT Ar-Rahmah, located in Makassar City, it has been determined that a significant number of students continue to face challenges in understanding the instructional material presented during the educational process. This is evidenced by the underperformance of the 5th-grade students in ICT learning at SDIT Ar-Rahmah, Makassar City. Their inability to perform is reflected in the daily assessment scores, which remain below the Defined Learning Compliance Criteria (KKTP) set by the institution. According to the daily assessment results conducted by Teacher Shabrina Dirham HS, S.Pd., it was observed that the students' performance in this assessment was quite poor; specifically, out of a total of 29 students, only 21 students, representing 72%, achieved scores meeting the KKTP, while 8 students, or 28%, failed to meet this benchmark. One of the factors contributing to the suboptimal ICT learning outcomes among students is the decline in interest in ICT lessons, coupled with a lack of motivation, which significantly hinders students' willingness to engage with and understand the instructional material presented. Furthermore, the researchers investigated various factors related to educators, specifically: 1) the heavy reliance on lecture-based instructional methods, 2) the ongoing challenges faced by educators in utilizing effective educational media, 3) inadequate motivational strategies employed by teachers to inspire students, 4) difficulties faced by teachers in identifying appropriate instructional media that caters to diverse learning styles, and 5) barriers faced by teachers in accessing Wi-Fi (wireless fidelity) facilities within the educational institution, thereby complicating the learning experience in the computer lab. Meanwhile, in relation to the students, several observations were made, specifically: 1) Students demonstrated a lack

of understanding of the material presented by the instructor, 2) Students showed low engagement during the learning process, 3) Students exhibited a decline in attention to the explanations given by the instructor, 4) Students experienced feelings of fatigue and a lack of enthusiasm towards the lessons, 5) Students considered the resources provided by the instructor to be unsuitable for their needs.

The problems that have been described must be overcome because they can have a negative impact on students, especially on the disruption of learning activities and student learning outcomes (Alannasir, 2023). Therefore, it is important to implement strategies that promote increased student engagement in Information and Communication Technology (ICT) education. One such strategy involves developing creative, innovative, interactive, and educational learning experiences that facilitate the improvement of students' academic outcomes. A well-known pedagogical model used in the Merdeka Curriculum is the Problem Based Learning model. Problem Based Learning is a learning model in which students are faced with a real problem that has been experienced by students (Yusmaniar et al., 2024). This methodology encourages students to actively pursue solutions to authentic problems faced within the school environment, community contexts, and on a global scale. Problem Based Learning represents a student-centered instructional approach that requires students to find solutions to challenges that lie at the heart of their educational experience (Hartono et al., 2023). In contemporary society, marked by the digital revolution, educational institutions are compelled to adopt digital-based pedagogical approaches to enhance students' learning experiences. The implementation of digital learning methodologies not only transforms instructional strategies but also triggers significant modifications in classroom dynamics, evaluative processes, and the way students engage with educational resources. Within this framework, learners are provided with a range of expanded opportunities to pursue autonomous learning, access relevant educational content, and actively participate in interactive pedagogical practices (Puteri et al., 2023). This investigation shows that the application of the Problem-Based Learning framework in the Merdeka Curriculum can significantly improve students' problem-solving competencies, as evidenced by metrics such as problem understanding, solution strategies, strategy utilization, and solution evaluation, all of which are categorized as proficient. Additionally, students' cognitive learning achievements have also been enhanced through the implementation of this pedagogical approach (Sapitri et al., 2024).

Quizizz is an interactive online quiz platform designed to make the learning process more interesting and effective which is able to provide instant feedback to students, so that the teacher as a facilitator immediately understands which material has been mastered or not (Irviana et al., 2024). Quizizz serves as a dynamic and versatile educational game application. Additionally, besides functioning as a tool for content delivery, Quizizz can also serve as an engaging and fun medium to assess students' learning outcomes (Salsabila et al., 2020). Quizizz facilitates competitive engagement among students, enhancing their active participation throughout the educational experience. Students are given the opportunity to take quizzes simultaneously in the classroom setting, allowing them to observe their real-time rankings on the leaderboard. Educators are equipped to monitor the assessment process and then retrieve results after quiz completion to effectively evaluate student performance. The implementation of this application is likely to foster student interest and improve their concentration levels (Aditiyawarman et al., 2022).

This research is important to carry out because technological developments and transformation of education in the era of the Industrial Revolution 4.0 demand significant changes in the role and competence of teachers (Musbaing, 2024). Based on the explanation above, the Problem Based Learning model, with the help of the interactive Quizizz media, can be an effective approach in teaching students to tackle complex problem-solving and increase their learning motivation. Combining Problem Based Learning with Quizizz can strengthen the learning process. Problem Based Learning provides a real-world problem context for students to study and solve in depth, while Quizizz can be used to measure students' understanding in a quick and fun way after the discussion and problem-solving process. Quizizz can also help teachers monitor students' understanding progress in real-time and adjust subsequent learning accordingly (Ardianti et al., 2022). Educators have the capacity to design more imaginative,

participatory, pioneering, and pedagogically enriching learning experiences. This not only facilitates students' understanding of the subject matter but also serves to enhance their motivation, foster active engagement, and help students become more proficient with technology, which is crucial in the contemporary educational landscape. Furthermore, modern education advocates for a more individualized and sustainable approach to the learning process, recognizing that learning is a lifelong endeavor shaped by a myriad of internal and external influences (Halil, 2022).

The integration of technology within educational frameworks enables educators to deliver prompt and precise feedback, thereby enhancing the assessment and modification of instructional strategies in alignment with the diverse requirements of learners (Sari & Munir, 2024). The situation requiring the adaptation of educational methodologies to align with contemporary technological advancements has sparked scholarly interest in integrating the Quizizz application as a pedagogical tool in the classroom environment. This educational tool is based on utilizing mobile phones (HandPhones) as devices where students can engage with a series of questions within a set time frame, and the application is capable of providing immediate feedback through score displays, allowing students to review their responses using their own mobile devices.

Based on the problems found, researchers want to conduct research with the title "The Effect of the Problem Based Learning Model Based on Quizizz Media on ICT Learning Outcomes of Class V Students of SDIT Ar-Rahmah, Makassar City"

2. METHODS

The study employs an experimental methodology. In this research, the initial step taken by the researchers at SDIT Ar-Rahmah Makassar City involved administering a pretest to students to assess their basic understanding of the material intended for study. The purpose of the pretest in this investigation is to gauge the extent of students' knowledge and competence prior to the implementation of instructional intervention. Following the pretest, the researchers conducted the educational process using the Problem-Based Learning model facilitated by Quizizz media. Throughout the instructional process, educators guided and supported students to ensure their active participation in learning activities, with the expectation that this involvement would foster an improvement in students' understanding. After the educational process concluded, a posttest was administered to students to evaluate the level of achievement of learning outcomes after the instructional intervention. This posttest is used to compare students' educational performance before and after the intervention, thereby facilitating the identification of the effects of the treatment provided. The data obtained from the Pretest and Posttest are then subject to analysis to ensure an improvement in students' competencies. By utilizing this experimental methodology, it is anticipated that empirical evidence will be provided to demonstrate that the applied pedagogical strategy has the capacity to significantly improve students' learning outcomes.

Experimental research is a methodological approach used to study the consequences of interventions under tightly controlled conditions. As a result, in the current investigation, the researchers applied an experimental methodology targeting fifth-grade students to assess the impact of the Problem-Based Learning model on Information and Communication Technology (ICT) learning outcomes among fifth-grade students at SDIT Ar-Rahmah in Makassar City. The research framework used in this study is a Quasi-Experimental Design. A distinguishing characteristic of Quasi-Experimental Design research is the inclusion of a control group and the execution of sampling in groups assigned non-randomly (Jamaluddin, 2019).

The researchers in this study used the determination of sample size using the census method or saturated sampling. Saturated sampling refers to a sampling technique where all members of the population are used as samples; an alternative term for saturated sampling is census (Sugiyono, 2019).

The research instrument represents the methodology used for the systematic collection of specific data and related information. The instruments used in this study include: 1) The Test Sheet, which serves as a methodological tool designed to assess or measure variables under predefined conditions and

criteria. The Pretest and Posttest administered in this study consist of multiple-choice questions, each containing 15 items. 2) The Observation Sheet, specifically designed for students, serves as a data collection instrument aimed at documenting student engagement during instructional activities. On the other hand, the Teacher Observation Sheet is designed to gather empirical data regarding the effectiveness of the teacher in delivering instructional content. 3) Documentation, which provides additional data within the context of the research, offering verifiable evidence such as photos and physical documents. To conduct a comprehensive analysis of the data obtained from the research results, both descriptive and inferential statistical methodologies are employed. The data derived from the Pretest and Posttest metrics are then subjected to comparative evaluation. The examination of value differences is exclusively performed on the averages of the two metrics, where the statistical technique known as the t-test is applied. Consequently, in the realm of quantitative research, the initial stage of data analysis begins with the aggregation of data, which is subsequently examined using both descriptive and inferential statistical methodologies.

3. RESULTS AND DISCUSSION

Overall, the findings show a positive trend in student engagement during the implementation of the Problem-Based Learning paradigm enhanced by Quizizz media. From these findings, it can be concluded that this pedagogical approach is effective in fostering student involvement, understanding, and enthusiasm in the educational process. As a result, this instructional model is highly recommended for continuous application to achieve more optimal educational outcomes.

1. Learning Process Using Problem Based Learning Model Based on Quizizz Media

a. Teacher Activity Observation Results

According to the findings from the study focused on the implementation of the Problem-Based Learning model by educators enhanced with Quizizz media, a significant improvement was observed at each session. The purpose of this evaluation is to assess the effectiveness of educators in managing the educational process and to measure the extent to which the pedagogical framework used can enhance student involvement and understanding.

Picture 3.1

Picture 3.2

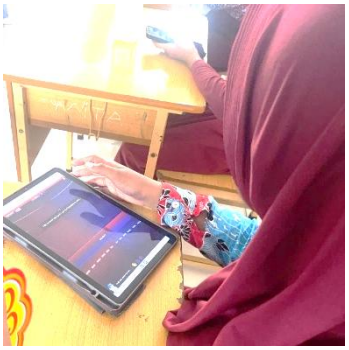
At Meeting II, the Teacher had implemented the Problem Based Learning learning model based on the Quizizz media as a model and learning media to make the learning process more enjoyable and effective, the Teacher obtained a score of 11 out of a maximum score of 20, with a percentage of 55% categorized as Poor. These results indicate that Teachers still have difficulty in implementing interactive learning methods and there are several aspects that need to be improved, such as effectiveness in guiding Students and providing more in-depth feedback on the results of their work.

At Meeting III, the Teacher's score increased to 15 out of 20, with a percentage of 75% in the Fairly Good qualification. This increase shows that Teachers are increasingly effective in presenting material, managing learning time and guiding Students in solving problems. The use of Quizizz media has also begun to be implemented more optimally, so that Students are more enthusiastic in participating in learning.

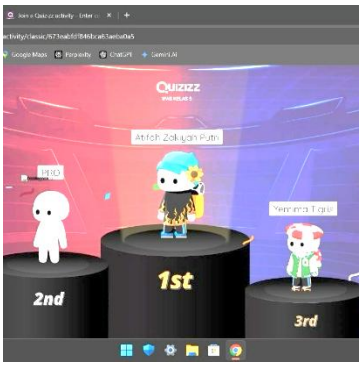
At Meeting IV, the Teacher's score reached 17 out of 20, with a percentage of 85%, which is included in the Good qualification. This result shows that the Teacher has mastered the application of the Problem Based Learning model based on the Quizizz media well. The Teacher is not only able to deliver the material effectively but also successfully creates an interactive learning environment and encourages Students to be more active in understanding the concepts taught. In addition, the discussion and reflection aspects after learning were also carried out well, providing an opportunity for Students to explore the material more optimally. Overall, the results of the study showed a positive increase in Teacher effectiveness when teaching using the Problem Based Learning learning model based on the Quizizz media. From these results, it can be concluded that the application of this learning model not only improves Teacher teaching skills but also contributes to increasing Student understanding and involvement in the learning process. Therefore, this method is highly recommended to continue to be applied and developed in learning in order to achieve more optimal results.

b. Student Activity Observation Results

Based on the results of observations made on student activities in implementing the Problem Based Learning model based on the Quizizz media, there is a significant influence on student involvement and understanding from meeting to meeting. This observation aims to measure the effectiveness of the learning model applied and to see the extent to which students are able to actively participate and understand the material being taught.



Picture 3.3



Picture 3.4

At Meeting II where the Teacher had implemented the Problem Based Learning model based on the Quizizz media. Students obtained a score of 13 out of a maximum score of 20, with a percentage of 65%, which is included in the Less Good qualification. These results indicate that students still have several obstacles in understanding the concepts given and in the courage to actively participate, such as asking questions or discussing with peers.

At Meeting III, the score obtained increased to 16 out of 20, with a percentage of 80%, which is in the Fairly Good qualification. This increase indicates that students have begun to get used to the problem-solving-based learning method and are more active in using the Quizizz media. They are more confident in answering questions, showing increased understanding of concepts, and participating more in class discussions.

At Meeting IV, the score increased to 19 out of 20, with a percentage of 95%, which is included in the Very Good qualification. These results indicate that students have understood the material well, are more independent in completing assignments, and show high enthusiasm in learning. In addition, students are active in solving the problems given, discussing with peers, and are more confident in answering questions on Quizizz. Overall, the results of the study showed a positive increasing trend in student activity during the implementation of the Problem Based Learning learning model based on Quizizz media. From these results, it can be concluded that this learning method is effective in increasing student involvement, understanding, and activeness in learning. Therefore, this learning model is highly recommended to be applied continuously in order to achieve more optimal learning outcomes.

2. The Influence of the Problem Based Learning Model Based on Quizizz Media on the ICT Learning Outcomes of Class V Students of SDIT Ar-Rahmah, Makassar City

a. Pretest of ICT Learning Outcomes of Class V Students of SDIT Ar-Rahmah, Makassar City, Before Implementing the Problem Based Learning Model Based on Quizizz Media

Based on the results of research conducted by researchers at SDIT Ar-Rahmah, Makassar City from January 19, 2025 to February 24, 2025, data was obtained through instruments so that ICT learning outcomes in the form of grades from class V of SDIT Ar-Rahmah, Makassar City can be known. Pretest data on ICT learning outcomes for class V students of SDIT Ar-Rahmah, Makassar City, can be seen as follows:

Statistics

		Pretest
N	Valid	29
	Missing	0
Mean		7.38
Std. Error of Mean		0.323
Median		7.00
Mode		7
Std. Deviation		1.741
Variance		3.030
Range		7
Minimum		4
Maximum		11
Sum		214

Overall, the lowest score obtained by students was 4, while the highest score reached 11. The range between the highest and lowest scores is 7, which indicates a level of variation in student achievement. If all scores are added up, the total of the pretest scores reaches 214.

By looking at this data, it can be concluded that most students get fairly good scores, with a tendency for scores to range from 7 to 8, although there are some students with lower or higher scores. As categorized in the guidelines of the Ministry of Education and Culture (Depdikbud), the student's information can be seen in the following table:

No	Interval (Scale 100)	Frequency	Percentage (%)	Learning Outcome Categories
1	0 – 34	4	13,80%	Very Low
2	35 – 54	18	62,00%	Low
3	55 – 64	4	13,80%	Medium

4	65 – 84	3	10,40%	High
5	85 – 100	0	0%	Very High
Amount	**-**	**29**	**100%**	-

Table 3.1 Categorization of Pretest Material Mastery

Overall, these data show that most students are still in the low and medium categories, which indicates the need for improvements in the learning process so that more students can reach the high or even very high categories.

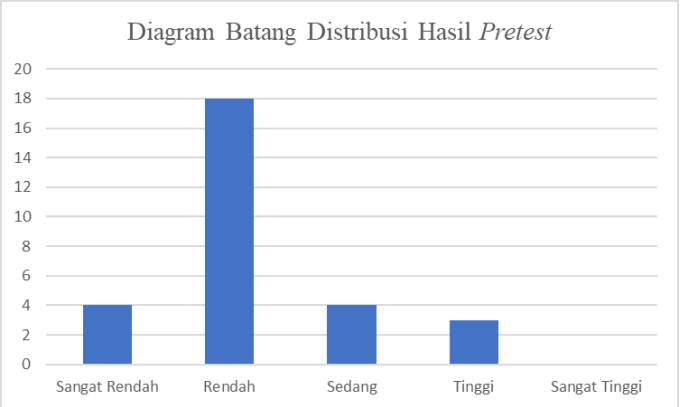


Figure 3.1 Pretest Bar Chart

The diagram presented above illustrates the Pretest results obtained by students, categorized into various levels of understanding, namely very low, low, medium, high, and very high. From the diagram, it is evident that the initial understanding of the material by the students requires improvement. This is demonstrated by the presence of 18 students classified in the low category (35-54) and 4 students in the medium category (55-64), resulting in a cumulative total of 22 students, or 75.86% of the entire student population, who have not yet reached an optimal level of understanding. Furthermore, there are 4 students (13.80%) who fall into the very low category (0-34), indicating that they have a very inadequate level of understanding.

b. Posttest of ICT Learning Outcomes of Class V Students of SDIT Ar-Rahmah, Makassar City, After Implementing the Problem Based Learning Model Based on Quizizz Media

The Posttest data related to the Information and Communication Technology (ICT) learning outcomes of fifth grade students at SDIT Ar-Rahmah, Makassar City can be analyzed as follows:

Statistics

		Posttest
N	Valid	29
	Missing	0
Mean		10.31
Std. Error of Mean		0.302
Median		10.00
Mode		10
Std. Deviation		1.628
Variance		2.650
Range		8
Minimum		7
Maximum		15
Sum		299

The posttest results of 29 students showed an increase in understanding after the learning was given. The average (mean) posttest score was 10.31, which was higher than the previous pretest score. The median posttest score was 10, which means that half of the students scored above or equal to 10, while the mode was also 10, indicating that this score appeared most often among the students.

The variation in test results is indicated by a standard deviation of 1.628, indicating that the students' scores were not too far from the average. The range of scores is 8, with the lowest score being 7 and the highest being 15. With a total score reaching 299, these results indicate an increase in students' understanding after learning compared to the pretest score.

These results reflect that most students experienced development in mastering the material after being given treatment. However, there is still variation in student achievement, so further evaluation is needed to ensure that all students can achieve optimal understanding.

No	Interval (Scale 100)	Frequency	Percentage (%)	Learning Outcome Categories
1	0 – 34	0	0%	Very Low
2	35 – 54	3	10,34%	Low
3	55 – 64	4	13,80%	Medium
4	65 – 84	20	68,96%	High
5	85 – 100	2	6,90%	Very High
Amount	**-**	**29**	**100%**	**-**

Table 3.2 Categorization of Posttest Material Mastery

Based on the results of the Posttest value conversion to a scale of 100, the data shows the distribution of Student understanding in five categories of learning outcomes. No Students are in the very low category (0-34), which means that all Students have achieved a better level of understanding after learning is carried out. As many as 3 Students (10.34%) are still in the low category (35-54), which indicates that they still have difficulty in understanding the material given. In the medium category (55-64), where 4 Students (13.80%). The majority of Students, namely 20 Students (68.96%), are in the high category (65-84), which indicates that most Students have understood the material well after the learning intervention. Meanwhile, 2 Students (6.90%) managed to reach the Very High category (85-100), indicating that they have mastered the material very well.

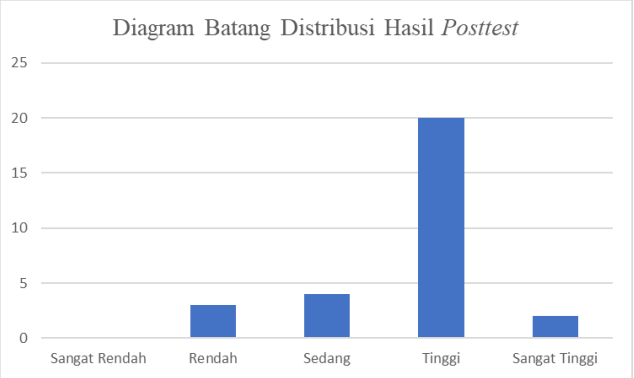


Figure 3.2 Posttest Bar Chart

These results indicate an increase in students' understanding compared to the previous pretest. Most students are now in the high category, which reflects the effectiveness of the learning that has been

implemented. However, there are still some students who need more attention to improve their understanding to reach a higher category.

The bar chart above shows the distribution of students' posttest results based on learning outcome categories. This diagram illustrates that the majority of students (20 students) are in the high category (65-84), while 4 students are in the medium category (55-64). Only 3 students are still in the low category (35-54), and 2 other students have reached the very high category (85-100). There are no students in the very low category (0-34).

Based on the findings from this study, it is evident that the majority of students showed an improvement in understanding after the instructional process. However, it is expected that certain students classified in the low and medium achievement levels may require additional support to facilitate further progress in their understanding.

3. Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	0.138	29	0.167	0.962	29	0.359

Based on the results of the Kolmogorov-Smirnov normality test, the statistical value = 0.138, df = 29, and p-value (Sig.) = 0.167 was obtained. Because the Sig. value > 0.05, the Pretest data is not significantly different from the normal distribution. Meanwhile, in Shapiro-Wilk, the statistical value = 0.962, df = 29, and p-value (Sig.) = 0.359 was obtained. The Sig. value > 0.05 also shows that the Pretest data is normally distributed. Thus, based on these two normality tests, it can be concluded that the data meets the normality test, so it can be used for parametric statistical analysis.

4. Homogeneity Test

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Pretest	Based on Mean	4.258	3	21	0.017
	Based on Median	3.235	3	21	0.043
	Based on Median and with adjusted df	3.235	3	13.850	0.055
	Based on trimmed mean	4.256	3	21	0.017

The findings obtained from the homogeneity of variance assessment using Levene's Statistics show a difference in variance across groups of learning outcome data that used the Problem Based Learning (PBL) framework enhanced by Quizizz media.

Based on the calculation using the mean, the resulting significance value was found to be less than 0.05, indicating that the variance among groups demonstrates homogeneity. A similar observation was made in the median-based assessment, where the significance value revealed substantial variance differences across groups. However, when the analysis was performed using the median with adjusted degrees of freedom, the findings indicated a significance value slightly exceeding 0.05, which is close

to the threshold for homogeneity. Nevertheless, the test based on the mean, which is generally more sensitive to variance differences, still yielded significant results.

As a result, it can be concluded that the variability of educational outcome data using the Quizizz platform in conjunction with the Problem Based Learning (PBL) model demonstrates homogeneity. Therefore, in subsequent analytical efforts, it is essential to consider the application of appropriate statistical methodologies for datasets that exhibit unequal variance across different groups.

5. Inferential Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.104	2.120		4.294	0.000
	Posttest	-0.167	.203	-0.156	-0.823	0.418

The findings obtained from the regression coefficient analysis show that the constant value (Intercept) is 9.104, with a significance value of 0.000. Since this significance value is less than 0.05, it can be stated that the constant in this regression model has a significant influence. This suggests that in the absence of changes in the Posttest variable, the Pretest value is expected to remain around 9.104. On the other hand, the regression coefficient for the Posttest variable is -0.167, with a significance value of 0.418, which exceeds the threshold of 0.05. This observation indicates that the Posttest variable does not have a significant impact on the Pretest. Additionally, the low t-value (-0.823) reinforces the idea that the relationship between these two variables is very weak. As a result, while the constant in the regression model shows a significant effect, the Posttest results do not significantly affect the Pretest results. This implies that the variance in Pretest values cannot be significantly explained by the Posttest values..

DISCUSSION

The integration of the Problem-Based Learning (PBL) framework based on Quizizz media in Information and Communication Technology (ICT) education for fifth-grade students at SDIT Ar-Rahmah, located in Makassar City, yielded favorable results as evidenced by a series of statistical assessments conducted. The findings from the normality test indicated that the Pretest and Posttest data followed a normal distribution, with the Kolmogorov-Smirnov test yielding a significance value of 0.167 and the Shapiro-Wilk test showing a significance value of 0.359, both of which exceeded the threshold of 0.05. Therefore, the data met the normality assumption and were deemed suitable for further analysis using parametric statistical methods. Furthermore, the homogeneity test revealed that the variance within the data was homogeneous. The findings from Levene's Test indicated that the variance between groups did not show a statistically significant difference, suggesting that the students' learning outcomes before and after the implementation of the Problem-Based Learning (PBL) model based on Quizizz media exhibited an adequate level of homogeneity, allowing for further statistical analysis. To assess the impact of this pedagogical model on student learning outcomes, inferential analysis was conducted using regression analysis. The findings from the regression coefficient analysis indicate that the constant in the regression model has a substantial influence, evidenced by a significance value of 0.000. This suggests that there are variables that significantly impact student learning outcomes. Although the significance value of 0.418 in the regression analysis indicates that the direct correlation between Pretest and Posttest is not statistically significant, the observed increase in average scores from Pretest to Posttest reflects the beneficial effects of implementing this instructional model. As a result, it can be

concluded that the Problem Based Learning (PBL) framework facilitated by Quizizz significantly enhances student academic performance. This pedagogical approach fosters a high level of student engagement in the educational process, strengthens their involvement in content assimilation, and stimulates their motivation through the interactive gamification features provided by Quizizz. Therefore, this framework is highly recommended as an innovative instructional strategy that proves effective in improving student learning outcomes, especially in disciplines that require comprehensive and interactive conceptual understanding.

4. CONLUSION AND SUGGESTIONS

1. The implementation of the Problem Based Learning (PBL) pedagogical framework integrated with Quizizz media among fifth grade students at SDIT Ar-Rahmah in Makassar City has demonstrated considerable effectiveness in enhancing student engagement and understanding. This is evidenced by observable improvements in both teacher and student participation during each session, culminating in very high performance metrics by the end of the instructional period. This achievement highlights that the integration of Quizizz within the Problem Based Learning model as an educational tool significantly promotes the development of more enjoyable interactions throughout the learning experience.
2. The educational outcomes related to Information and Communication Technology (ICT) among students demonstrated a substantial improvement following the implementation of the Problem Based Learning (PBL) model facilitated through Quizizz media. Empirical data revealed that the average Posttest scores showed a significant increase compared to the Pretest scores, thereby illustrating the effectiveness of this pedagogical approach in enhancing student comprehension. Furthermore, the learning outcomes reflected an upward trajectory, with an increasing number of students attaining high and very high classifications, indicating notable progress in the achievement of ICT learning outcomes among the students.
3. The implementation of the media-oriented Problem Based Learning (PBL) instructional model through Quizizz has shown a beneficial impact on students' performance in Information and Communication Technology (ICT), although the regression analysis indicates that the observed increase between Pretest and Posttest scores does not reach statistical significance. Nevertheless, the rise in the average Posttest score serves as compelling evidence that this pedagogical approach significantly contributes to enhancing students' understanding of the subject matter.

SUGGESTIONS

Based on the results of this study, there are several suggestions that can be considered for future learning development:

1. For Teachers: Teachers are advised to apply the Problem Based Learning model based on Quizizz media more consistently in learning, especially in subjects that require a deep understanding of concepts. In addition, teachers can develop variations in the use of other interactive media to increase student involvement and create a more enjoyable learning atmosphere.
2. For Schools: Schools are expected to provide support in the form of adequate technological facilities, such as stable internet access and devices that support the use of Quizizz, so that digital-based learning can run optimally. In addition, training for teachers on the use of technology-based learning media also needs to be improved.
3. For Further Researchers: Further research can be conducted with a wider scope, both in terms of the number of samples and the variety of subjects, to see the effectiveness of the Problem Based Learning model based on Quizizz media in a more diverse learning context. In addition, research can examine other aspects such as improving critical thinking skills, creativity or student learning motivation in the long term.

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