

Comparison of the Effectiveness of Conventional (Paper-Based) and Digital (Quizizz) Evaluations on Students' Learning Outcomes

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Abstract: The development of digital technology has brought significant changes in how teachers evaluate learning, which was previously done conventionally using paper, now shifting to digital systems by utilizing interactive platforms such as Quizizz. The objective of this study is to compare the effectiveness of conventional evaluation using paper and the evaluation of IPAS material "Magnet" using Quizizz on the learning outcomes of students in classes VA and VC of SD Bantuan Slamet Riyadi Sekadau. The author utilized a quantitative approach with a quasi-experimental design in the form of a pretest-posttest with a control group. The author used two classes totaling 72 students: the experiment class (VC) with 36 students, which received treatment using Quizizz-based evaluation, and the control class (VA) with 36 students, which implemented conventional evaluation using paper. The instrument was based on pretest and posttest learning outcomes, as well as the results of a student learning motivation questionnaire using a Likert scale. The research instruments included a learning outcome test and observation sheets. Data analysis used an independent t-test to identify differences in learning outcomes between the two groups. Students who participated in the evaluation using Quizizz achieved better learning outcomes and showed higher motivation and participation. Therefore, the researcher concluded that digital assessment using Quizizz is more efficient compared to traditional paper-based assessment in improving student learning outcomes at the elementary school level.

Keyword: Assesment; Conventional evaluation; Digital evaluation; Quizizz.

Introduction

Assessment constitutes an indispensable component of instructional systems, serving as the primary mechanism for determining the extent to which learning objectives are attained and instruction is delivered effectively (Zamzaili & Swita, 2021). Traditional paper-based assessments, while deeply embedded in educational practice, present inherent constraints such as delayed feedback cycles, high resource consumption, manual scoring burden, and diminished student engagement (Widiandana et al., 2024). These limitations challenge their pedagogical efficacy in contemporary learning environments that increasingly emphasize interactivity, efficiency, and learner-centeredness. The assessment of students' learning success encompasses all classroom activities, beginning from the presentation of material to determining the extent to which students achieve the competencies and learning objectives established by the teacher. Conversely, the assessment of teacher performance in delivering instructional content involves examining the planning process, including the selection of methods, approaches, and instructional media used, the delivery of the material, and the choice of assessment techniques.

In addition, learning assessment provides teachers with guidance in evaluating the ongoing instructional process. For example, after identifying students' learning outcomes, teachers can determine the necessary subsequent steps and select appropriate instructional methods or media to ensure that the expected competencies and learning objectives are achieved. In other words, assessment is not merely concerned with evaluating final results but also serves as an important source of

Information throughout the learning process (Dzulfian Syafrian, 2025).

With the rapid advancement of technology, teachers as the forefront of education are also required to keep pace with these developments, including in classroom teaching and learning activities. In the learning process, the role of technology is expected to contribute positively to the progress of the education sector. As technology evolves, teachers are expected to be able to utilize digital media to deliver instructional content, including in conducting learning assessments, as both aspects can significantly influence the success of the learning process (Andi Sadriani et al., 2023). Traditionally, learning assessments have predominantly been conducted using conventional paper-based methods. Such assessments are administered through written examinations that rely on paper and writing tools (Asral & Chandra, 2021). However, paper-based assessments present several drawbacks, including excessive use of paper for printing much of which is discarded afterward, limited implementation time restricted to teachers' working hours, and the need for direct teacher involvement throughout the process (Widiandana et al., 2024). Another limitation is that paper-based assessments are often perceived as monotonous and insufficiently challenging, resulting in low student motivation to study or to compete for better scores (Terusianita et al., 2024). Additionally, administering paper-based assessments requires considerable effort, both in distributing test materials and collecting answer sheets. Teachers also need substantial time to carry out manual scoring. Moreover, paper-based assessment does not allow for immediate feedback to students, which reduces the efficiency of the learning improvement process.

The use of conventional tests for students who are already accustomed to technology often results in suboptimal outcomes. This is due to students' low interest and limited skills in engaging with monotonous forms of assessment. In contrast, the implementation of technology-based learning and assessment featuring appealing, interactive designs that align with the characteristics of today's learners can enhance their motivation, attention, and enthusiasm for learning ((Lintjewas, 2022). This condition encourages teachers to innovate in selecting and utilizing assessment media that are more engaging, efficient, and capable of increasing students' enthusiasm and participation in learning activities. As technology continues to advance, various learning platforms have emerged to support digital assessment processes, one of which is Quizizz. The use of digital evaluation tools as assessment media can substantially improve the quality of learning in elementary schools by offering a more effective, engaging, and easily accessible assessment approach (Ramadhani et al.,

2025). Quizizz is a platform that students can access conveniently through their own devices. For students who do not have personal devices, teachers may still conduct assessments by utilizing the Quizizz paper-mode feature as an alternative. Quizizz is a free online educational platform or e-learning tool designed to enhance both teachers' instructional engagement and students' learning outcomes. It can be accessed at no cost via smartphones or computers through the Android-based application available on the PlayStore (Saputri & Prastowo, 2024). The platform includes features such as AI Mode, Presentation Mode, and a Response System, which facilitate teachers in creating, delivering, and evaluating learning assessments. These features are considered more engaging, interactive, and efficient compared to conventional paper-based assessments. The Quizizz application also offers various appealing elements and game-like characteristics, including avatars, themes, memes, and entertaining music, which help create an enjoyable and interactive learning atmosphere (Terusianita et al., 2024). In addition, the diverse features of Quizizz make students feel more comfortable and enthusiastic during assessments. Consequently, students are encouraged to complete the assessments to the best of their ability (Pusparani, 2020).

The use of digital-based assessments such as Quizizz is considered more engaging and enjoyable because Quizizz is a game-based assessment platform that can stimulate students' enthusiasm, interest, and learning outcomes (Dermawan et al., 2024) (Dermawan et al., 2024). In addition, Quizizz is an interactive and flexible game application. Beyond its various functions, Quizizz can also be utilized as an appealing and enjoyable evaluation tool within the teaching and learning process (Mustika Hati, 2021). In the context of learning in elementary schools, particularly among fifth-grade students at SD Bantuan Slamet Riyadi Sekadau, there are several factors that influence the implementation of learning assessments. These factors include the school's limited facilities, the readiness level of teachers and students in utilizing technology, and the availability as well as the uneven access to the internet. In addition, the habitual use of paper in assessment activities also affects the effectiveness of the evaluation process. Student motivation is another important aspect that must be considered, especially in efforts to enhance engagement and learning outcomes through the selection of more interactive and modern evaluation media. On the other hand, there is a research gap that further emphasizes the importance of this study. Most previous studies related to the use of Quizizz were conducted at the junior and senior high school levels, where technological infrastructure is more advanced. Research that specifically analyzes the comparative effectiveness of traditional and digital evaluations at the elementary school level, particularly in institutions with limited resources such as SD Bantuan Slamet Riyadi remains very limited. Moreover, previous studies generally only discussed the general advantages of Quizizz without providing a direct comparison between the two evaluation methods within a real elementary school context.

Given this background, this study was conducted to bridge that gap and address the issues present in the school, particularly to evaluate whether digital evaluation media such as Quizizz can provide more effective and efficient results, as well as improve student motivation and learning achievement compared to conventional paper-based evaluations in the learning process of the IPAS subject on the topic of “Magnet” for fifth-grade students at SD Bantuan Slamet Riyadi Sekadau.

Methods

In this study, the researcher employed a quantitative method with a quasi-experimental design, specifically utilizing a pretest-posttest control group. Qualitative descriptive research is a method used to explain, analyze, and describe a phenomenon under study, as well as to draw conclusions from the observed phenomena using specific techniques (Wahyuni & Adnan, 2024). Meanwhile, a quasi-experiment is a type of experiment where the assignment of the smallest units to the experimental and control groups is non-random (Hastjarjo, 2019). The purpose of this study is to determine the difference in effectiveness between conventional paper-based evaluation media and Quizizz-based digital evaluation on student learning outcomes in the IPAS subject material “Magnet”. The population of this study consisted of 72 students from classes VA and VC of SD Bantuan Slamet Riyadi Sekadau for the 2025/2026 academic year. All these students were then equally divided into two treatment groups: an experiment class with 36 students who participated in the assessment activity using Quizizz digital media, and a control class with 36 students who participated in the paper-based (conventional) assessment.

The instruments used in this study consisted of two types of tests, namely the pretest and posttest, which were designed based on similar competency indicators. The pretest comprised 30 multiple-choice questions aimed at assessing students’ initial abilities before the treatment. Meanwhile, the posttest consisted of 20 multiple-choice questions that served to evaluate students’ final abilities after completing the learning process and the research intervention. Both tests were developed based on the same indicators, namely: (1) identifying magnetic and non-magnetic objects; (2) describing magnetic poles and the characteristics of attraction and repulsion; (3) demonstrating the direction of magnetic poles in a compass and how to use it; (4) explaining the process of making magnets and conditions that may cause a magnet to lose its properties; (5) identifying categories of magnets based on their shape and origin; (6) analyzing the applications of magnets in daily life; and (7) recognizing magnetic force as a non-contact force. The consistency of indicators between the pretest and posttest ensures that the analysis of students’ learning outcomes can be carried out objectively and measurably. Prior to administering the assessments, the researcher conducted a validity test on the instruments to be used. The pretest and posttest were administered to both groups using instruments that had been validated

by experts (Iskandar et al., 2025). The grouping of participants was carried out based on considerations of equal academic abilities and relatively similar learning conditions, so that the comparison results between the two groups could objectively reflect the influence of the evaluation media. The instruments applied in this study consisted of two main categories, namely learning outcome evaluation and a student motivation questionnaire. Achievement motivation is a highly crucial element in the field of education. This type of motivation plays a significant role in students' learning outcomes and the level of achievement they can attain. Achievement motivation functions as a driving force for individuals to improve their performance and serves as a stimulus for someone to reach their desired level of success. Therefore, a tool to measure achievement motivation is essential (Hakim, Mustika, 2021).

The assessment of learning outcomes was developed in accordance with basic skill indicators and learning objectives relevant to the material being taught. This evaluation was used to measure students' cognitive abilities before and after the treatment (pretest and posttest), allowing for the identification of improvements in their learning outcomes. Meanwhile, the student learning motivation questionnaire was used to obtain data about the level of students' interest, enthusiasm, and engagement while participating in the assessment process, both through the digital Quizizz media and conventional media. The questionnaire was compiled using a Likert scale with several indicators such as attention, relevance, confidence, and satisfaction (ARCS Model), in order to comprehensively describe student learning motivation

This scale utilizes an ordinal measure, allowing it to produce rankings even though the magnitude of the difference between respondents is unknown. Every response for an element in a tool that uses the Likert scale has variations ranging from very positive to very negative, which include terms such as: strongly agree (SS), agree (ST), doubtful (R), disagree (TS), and strongly disagree (STS). The questionnaire used in this study identified the following aspects: 1. Data about respondents, 2. Respondents' views on the Quizizz application in conducting the assessment, and 3. The level of respondent engagement when using the Quizizz application compared to other assessment methodologies. This questionnaire provided five scoring options: 1 = Strongly Disagree, 2 = Disagree, 3 = Moderately Agree, 4 = Agree, and 5 = Strongly Agree. The following are the parameters for interpreting the scores based on intervals:

Score $\leq$ 35%	= Strongly Disagree
Score 36 - 53%	= Disagree
Score 54 - 70%	= Moderately Agree
Score 71- 85%	= Agree
Score $\geq$ 85%	= Strongly Agree

Before being applied in the study, both tools had undergone validity and reliability testing to ensure that every question item and questionnaire statement had an adequate level of accuracy and consistency, so that the obtained data could be scientifically justifiable.

Results And Discussion

Before implementing the Quizizz evaluation media in class 5C, the researcher first conducted a pretest for both groups, namely the experimental class and the control class. The pretest results showed that the average score of class 5A (control) was 64.25, while class 5C (experimental) obtained an average score of 63.83.

After administering the pretest and obtaining the initial results, the researcher then conducted a posttest for both classes using questions with the same level of difficulty, although the wording of the questions had been modified. Based on the pretest and posttest results, class 5A achieved an average score of 67.91, and class 5C obtained an average score of 81.38. The researcher then tested the normality of these results, and the findings were as follows:

Table 1. Normality Test Table

Tests of Normality							
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Nilai Skor	PreTest (Kontrol) - Kelas 5A	0.144	36	0.057	0.953	36	0.129
	PostTest (Kontrol) - Kelas 5A	0.138	36	0.082	0.958	36	0.183
	PreTest (Eksperimen) - Kelas 5C	0.116	36	0.200 [*]	0.974	36	0.542
	PostTest (Eksperimen) - Kelas 5C	0.120	36	0.200 [*]	0.967	36	0.341

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

a. Lilliefors Significance Correction

Based on the SPSS output above, it can be seen from the Sig. values of each class both using the Kolmogorov-Smirnov Normality Test and the Shapiro-Wilk Normality Test that the Sig. value is > 0.05 . Therefore, it can be concluded that the data in this study are normally distributed. After obtaining the normality test results, refer to the "Test of Normality" table. If the significance value is greater than 0.05, the data are considered normally distributed. However, if the significance value is less than 0.05, the data are not normally distributed (Iskandar et al., 2025).

Table 2. Homogeneity Test Table

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Nilai Skor	Based on Mean	2.636	3	140	0.052
	Based on Median	2.278	3	140	0.082
	Based on Median and with adjusted df	2.278	3	114.962	0.083
	Based on trimmed mean	2.496	3	140	0.062

Based on the SPSS output above, it can be seen that the Sig. value in the “Based on Mean” section is 0.052, which is greater than 0.05 ($0.052 > 0.05$). This indicates that the data in this study are homogeneous. In addition, the p-value for the posttest is recorded as higher than 0.05, suggesting that the variances between the control class and the experimental class in the post-test are considered similar. Therefore, the data from both groups, including the pre-test and post-test, meet the homogeneity requirement, which is an important criterion for conducting subsequent statistical analyses such as the t-test (Iskandar et al., 2025).

After determining that the results of the study fall into the categories of normal and homogeneous, the researcher proceeded to perform an independent t-test to identify differences in learning outcomes between the two groups. The independent sample t-test is a crucial statistical method widely used across various disciplines to evaluate differences in the mean scores of two unrelated groups and is presented in the following table:

Table 3.Independent T-Test

Group Statistics					
	Kelompok	N	Mean	Std. Deviation	Std. Error Mean
Hasil Belajar	Posttest (Kontrol)	36	69,92	6,226	1,038
	Posttest (Eksperimen)	36	81,39	10,044	1,674

Based on the table above, the average posttest learning outcome score for the control class was 69.92 and the average posttest learning outcome score for the experimental class was 81.39, thus it can be concluded that there is a difference in the learning outcomes between the control class and the experimental class.

Table 4. Independent Sample Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Learning Outcomes	Equal variances assumed	6,722	,012	-5,825	70	,000	-11,472	1,969	-15,400	-7,544
	Equal variances not assumed			-5,825	58,439	,000	-11,472	1,969	-15,414	-7,531

Based on the table above, sig value obtained is $0.000 < 0.05$. In accordance with the decision-making basis for the Independent Samples Test, it can be concluded that there is a difference in the learning outcomes between the control class and the experimental class. This implies that there is a significant change or difference between the Pretest and Posttest scores for both Class VC and Class VA. Based on this research, it can be concluded that the use of the digital application Quizizz is more effective in improving student learning achievement compared to traditional paper-based evaluation methods.

After conducting the Pretest and Posttest, the researcher then distributed a questionnaire to students in Class VC to determine their level of learning motivation after using the Quizizz evaluation media, and the following results were obtained:

Table 5. Percentage of Questionnaire Results

No	Perception Statement	Total Score	Percentage
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1	The Quizizz application is easy to understand	170	94,44
2	Quick in displaying results	175	97,22
3	The appearance of the Quizizz application is very attractive	175	97,22
4	The Quizizz application increases my curiosity in learning the Magnet topic in the IPAS subject	170	94,44
5	The Quizizz application motivates me to learn the magnet topic	175	97,22
6	I am more enthusiastic about participating in assessments using Quizizz	170	94,44
7	Using Quizizz is enjoyable for me	175	97,22
8	The Quizizz application is easy to use	165	91,66
Total		1.375	763,86
Average		171,88	95,48
Criteria		Strongly Agree	

Overall, this data indicates that the 36 respondents have a very positive and highly uniform (consistent) perception or answers to the 8 questions posed. Almost all respondents answered with a score of 4 (Agree) or 5 (Strongly Agree) for all questions. Based on the data analysis above regarding student interest in Quizizz as a digital-based evaluation medium, the result obtained is that the majority of respondents gave the answer "Strongly Agree" with a percentage of 95,48%. Therefore, it can be concluded that the use of Quizizz in assessment activities can increase students' motivation and learning outcomes.

In general, the majority of students strongly support the utilization of Quizizz as an evaluation tool in their learning process because the platform is very easy to use and does not burden them. Quizizz also provides a more positive experience for the learners. Furthermore, the Quizizz application can be accessed without cost, which allows students to use Quizizz more easily compared to traditional assessment methods. The questions in the Quizizz application feature an attractive design, making students more focused and concentrated when working on the assessment questions. Students who have a high level of anxiety in taking assessments tend to feel more relaxed with the appealing display of the Quizizz application.

Conclusion

Based on the results of the research conducted, it can be concluded that the use of the digital evaluation media *Quizizz* provides a more efficient impact compared to traditional paper-based evaluation methods in improving the learning achievement of fifth-grade students at SD Bantuan Slamet Riyadi Sekadau. This difference in

effectiveness is evident from the increase in learning outcomes in the experimental class, where the posttest scores reached an average of 81.39, while the control class that used paper-based evaluation obtained an average score of only 69.92. This difference indicates that the use of Quizizz can produce meaningful improvements in students' understanding and learning achievement.

Before further analysis was carried out, the normality test on the pretest and posttest data showed that all data were normally distributed. This allowed the researcher to proceed to the next stage of analysis using parametric statistical tests, namely the Independent Samples t-test. The results indicated a significance value of $0.000 < 0.05$, showing a significant difference in learning outcomes between the group that received the experimental treatment and the group that did not. Therefore, the improvement in the learning achievement of the experimental class was not coincidental; rather, it was due to the use of the Quizizz evaluation media, which is more interactive, engaging, and capable of maximizing student participation.

In addition to positively affecting learning outcomes, the implementation of Quizizz also proved to increase students' learning motivation. This is supported by the results of the student motivation questionnaire, which showed a percentage of 95.48%, categorized as "Strongly Agree." This percentage indicates that most students experienced a more enjoyable, easy-to-understand, and motivating learning environment when participating in assessments through Quizizz. Features such as attractive visual displays, dynamic time settings, immediate scoring, and gamification elements made students more enthusiastic about taking part in the assessment.

Overall, the findings of this study emphasize that the use of the digital evaluation media Quizizz not only improves students' learning outcomes but also plays an important role in enhancing student motivation and engagement throughout the learning process. Thus, Quizizz can be recommended as an innovative alternative for assessment activities, especially in IPAS learning, to support more effective, enjoyable, and digitally aligned evaluation practices.

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