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The Effect of Lesson Plans on Teaching Quality and Learning Outcomes

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ABSTRACT

The quality of teaching at the elementary education level is primarily determined by the ability and readiness of teachers in developing and implementing effective teaching methods. One of the main factors that guarantee the success of the learning process is the preparation of a structured lesson plan that focuses on student needs. This study aims to conduct an empirical study analyzing the effect of lesson plans on the quality of teacher teaching and learning activities and student learning outcomes at elementary level. The approach used is a quantitative approach with a quasi-experimental design, involving 12 teachers and 45 students from two classes in one elementary school in Sukasari District, Bandung City. Data collection was carried out through observation of teacher teaching quality and student learning outcome tests. The findings of this study were 86.58% of teachers consistently planning learning can improve teaching quality. Strengthened by the results of student learning analysis using ANCOVA, namely a sig value of 0.000 <0.05, confirming that lesson plans affect teaching quality and learning outcomes in science subjects.

ARTICLE INFORMATION

Keywords:
learning outcomes; lesson plans; teacher quality

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INTRODUCTION

In the context of basic education, the level of learning quality is greatly affected by the readiness and competence of teachers in designing and implementing effective teaching strategies. One of the fundamental elements in ensuring the success of the learning process is systematic lesson plans based on student needs. This is in line with Harefa et al. (2023) that the set goals will be achieved through student-centered lesson plans. In the same context, according to Saypani et al. (2023), a student-centered learning approach makes the learning process more lively, encourages cooperation between students, and develops their critical thinking skills. Lesson plans not only function as a guideline for teachers in managing classroom activities, but also play a role in increasing the effectiveness of learning activities by formulating objectives, strategies, methods, and learning evaluations in a structured manner. Teachers with mature lesson plans tend to be better able to create a conducive learning environment, increase student engagement, and achieve optimal learning outcomes (Sehweil et al., 2022). Likewise, according to Mudrikah et al. (2021), a lack of planning when implementing an activity can cause various difficulties and increase the risk of failure of objectives.

Although lesson planning is a crucial aspect of education, there are still variations in its implementation in elementary schools. Several previous studies have highlighted that differences in the quality of lesson plans can significantly impact the effectiveness of teacher teaching and student academic achievement. Widyanto and Wahyuni (2020) have researched the implementation of lesson plans that affect teacher performance and student learning processes. Appropriate lesson plans must also be adjusted to the curriculum used. As an effort to restore the development of education that has declined drastically, the central government issued a policy related to the independent learning

curriculum, previously known as the prototype curriculum (Rahayu et al., 2022; Sumarsih et al., 2022). This Merdeka curriculum design can achieve the lesson plan well (Ariesanti et al. 2023).

Although the importance of lesson plans in education has long been recognized, the way teachers plan lessons in elementary schools is still very diverse. In practice, some teachers still prepare lesson plans that are not in accordance with the curriculum (Kaenah & Utami, 2023) or even teach without careful planning (Azzahra et al., 2023), thus reducing the effectiveness of learning activities. This phenomenon raises the question of the extent to which lesson plan contributes empirically to the quality of education and student learning outcomes. In addition, although various studies discuss lesson plan strategies, most studies are still descriptive and have not quantitatively measured the relationship between these variables and the quality of education and student learning outcomes. The lack of empirical evidence linking lesson plans to student academic achievement at the elementary school level indicates a gap in academic studies that needs to be filled. Thus, this study seeks to answer these problems through a data-based approach, to provide a deeper understanding of the real impact of lesson plan on teaching effectiveness and student academic success.

Based on the identified problems, this study aims to empirically analyze the effect of lesson plans on the quality of education and student learning outcomes at the elementary school level. Specifically, this study seeks to measure the extent to which systematic and student-based lesson plans can improve the effectiveness of teacher teaching, which ultimately impacts student academic achievement. Understanding the correlation between these variables, this study is expected to provide data-based insights into the importance of lesson plans in improving the quality of elementary education. Furthermore, this study aims to present findings that can be used as a basis for designing more strategic education policies, especially in improving teacher competence in preparing quality lesson plans. With an evidence-based approach, This research is expected to provide a contribution in the form of contribute to the development of more effective learning models and support the improvement of the professional quality of a teacher in carrying out his/her educational duties.

Another gap in the academic literature is the lack of a quantitative data-based approach that measures the real impact of lesson plans on the quality of teacher teaching and student learning outcomes. Most studies focus more on qualitative perspectives without providing statistical evidence that can be used as a basis for making educational policies. On that basis, this research is here to fill this gap by conducting a more comprehensive empirical analysis to identify the strategic role of lesson plans in improving teaching effectiveness and student academic achievement. Thus, this research aims to obtain results that will significantly contribute to developing educational theory and teaching practices in elementary schools.

This study offers a new contribution to lesson plans by empirically analyzing the relationship between lesson plans, teacher teaching quality, and student learning outcomes at the elementary school level. Unlike Nurhasanah et al. (2021), this study is more descriptive. This study uses a quantitative approach for objective and systematic impact measurement. Thus, this study not only provides theoretical insight into the importance of lesson plans but also provides empirical evidence that can be used as a reference in decision making in the field of education. In addition to the methodological aspect, the novelty of this study also lies in its relevance in the current educational context, especially in facing the challenges of improving the quality of learning in the era of a dynamic and competency-based curriculum. This study strengthens the theory that effective lesson plans are the primary foundation for improving learning quality and outcomes. It supports the concept that thorough planning, such as planning learning objectives, teaching methods, and integrated evaluation, contributes to the success of the educational process. This research was conducted with the hope that more targeted recommendations for teachers in designing effective learning and supporting the development of educational policies that are oriented towards improving the quality of teaching. With

an evidence-based approach, this study contributes to strengthening more systematic, measurable, and sustainable pedagogical practices in elementary schools.

METHOD

This study applies quantitative methods with a quasi-experimental design to investigate the effect of lesson plans on teacher teaching quality and student learning outcomes. This approach was chosen because it allows researchers to analyze the causal relationship between the independent variable (lesson plans) and the dependent variable (teacher teaching quality and Student learning outcomes) under conditions that are close to real experiments. This is achieved by comparing the experimental group with the control group (Cham et al. 2024). This study takes all teachers as its population who taught at one of the elementary schools in Sukasari District, Bandung City, totaling 12 people. The student research sample was selected using a purposive sampling technique, with the analysis unit being two classes totaling 45 students. These classes were selected based on certain criteria, such as uniformity in the curriculum applied and relatively homogeneous student characteristics in terms of academic background. According to Andrade (2021), the purposive sampling technique is used to ensure that the sample is truly in line with the purpose and target of the research, thereby increasing the accuracy and reliability of the study.

The quantitative data-based approach in this study was designed to ensure that each stage of lesson plans can be measured objectively, including the preparation, implementation, evaluation, and data analysis (Ainy et al., 2021). The preparation stage is carried out with initial planning, teachers prepare teaching modules based on the applicable curriculum, with measurable success indicators and integrated learning using multimedia. The implementation stage is carried out by carrying out learning in accordance with the teaching modules that have been prepared, while observations are carried out to assess the quality of teacher teaching. Furthermore, the evaluation stage measures student learning outcomes by giving a rubric-assisted test to assess their academic achievement after implementing lesson plans. The test is used for the pre-test and post-test as a data collection instrument. Before use, research instruments must be validated and tested for reliability (Arsyad et al., 2024). After the evaluation is carried out, the next stage is data analysis. Analysis The data obtained was analyzed using the ANCOVA technique to control confounding variables and test learning outcome variation between classes by considering the quality of lesson plans.

Student learning outcome tests are a technique used in this study to collect data and teaching quality observations. The Student Learning Outcome Test was developed using an assessment rubric, which was designed to measure the achievement of student competencies in accordance with learning objectives (Nujum et al., 2025). Meanwhile, teaching quality observations were carried out by assessing teachers by the principal based on an observation rubric that reflects pedagogical skills, student involvement, and the application of learning strategies in accordance with the Teaching Module. The data were analyzed in this study using the Analysis of Covariance (ANCOVA) technique to test differences in student learning outcomes while controlling for confounding variables (Leppink, 2018). ANCOVA was chosen because it can isolate the effects of lesson plans from other factors that may affect teaching quality and student academic achievement. With this approach, the study can provide more accurate conclusions regarding the impact of lesson plans on teacher teaching quality and student learning outcomes.

RESULTS AND DISCUSSION

The indicators measured from teacher observations by the principal are lesson plans, including teaching modules and other learning tools, teaching implementation and follow-up of teaching results. To see the picture of the three indicators, they are analyzed descriptively using percentage analysis

and then entered into the assessment category. The results of data from respondents (teachers) regarding observations by the principal can be seen in Table 1.

Table 1. Description of Teacher Observation Percentage

Item	(%)	Keterangan
Lesson plans	86.58	Good
T eaching implementation	84.33	Good
Follow-up of teaching results	85.48	Good

Table 1 shows respondents' statements regarding teacher observations by the principal, which shows a percentage in the good category of each indicator, where the highest indicator achievement is in lesson plans, with a percentage of 86.58%. In contrast, the lowest % is the teaching implementation indicator, 84.33%. Therefore, it can be concluded that the lesson plans teachers implement show the highest value, where teachers prepare lesson plans well to improve teaching quality. Furthermore, differences in student learning outcomes are evidenced by Student learning outcomes during observations in one of the classes. These differences can be seen in classes that are given lesson plans using multimedia teaching modules (teaching quality) and classes that are given lesson plans teaching modules that do not use multimedia can be seen in Table 2.

Table 2. Student Learning Outcomes

	Control Class		Experimental Class	
	Pre-test	Post-test	Pre-test	Post-test
Number of Students	45	45	45	45
Highest Score	80	89	80	100
Lowest Score	20	55	20	60
Average	53	72.37	44.8	78.75

There is a striking difference between the trial class and comparison class, where the average post-test score of the experimental class is 78.75 with the highest score of 100, higher than the control class which has an average score of 72.37 and the highest score of 89. While the average pre-test is 44.8 with the highest score of 80 in the control class and in the experimental class the average score is 53 with the highest score of 80. This shows that there is an increase in student learning outcomes after using the Multimedia Teaching Module lesson plans. The data is then tested for normality. The normality test used is the Shapiro-Wilk test because the data is less than 100 samples (Habibzadeh, 2024). This test is very effective for sample sizes between 10 and 50, which provides reliable results and maintains high power in detecting abnormalities (Souza et al., 2023). The results of the Normality test can be seen in Table 3.

Table 3. Shapiro-Wilk Normality Test

Group	Shapiro-Wilk		
	Statistic	df	Significant
Pre-test Control	0.962	45	0.143
Post-test Control	0.938	45	0.018
Pre-test Experiment	0.968	45	0.249
Post-test Experiment	0.980	45	0.637

The normality test, as detailed in Table 3, revealed that both the pre-test and post-test data for the control and experimental groups exhibited P-values exceeding 0.05, specifically 0.962 and 0.968

for the pre-test, and 0.938 and 0.980 for the post-test, respectively. This outcome confirms that the data aligns with a normal distribution, as supported by Andrade (2019). Consequently, the data fulfills the normality curve requirements essential for conducting parametric statistical analysis, as Saifu et al. (2021) highlight. With the data confirmed to be normally distributed, the subsequent step involved performing a homogeneity test, the results of which are presented in Table 4.

The results of the normality test listed in Table 3 show that the pre-test P value for the control group is 0.962 and the experimental group is 0.968. Furthermore, the post-test normality test shows a P value of 0.938 for the control group and 0.980 for the experimental group. Since all P values for both pre-test and post-test are greater than 0.05 (p>0.05), This shows that the research data are normally distributed. Thus, the requirements for the data normality curve for parametric statistical analysis are met, and the analysis can be continued with the homogeneity test whose data are presented in Table 4.

Table 4. Homogeneity Test

Variance	**Homogeneity**	
	Levene's Test Score	**Significant**
Post-test	1.532	0.219

Table 4 presents the results of the homogeneity test using the Levene test show that the data variance is homogeneous (Sig = 0.219). The parametric analysis carried out in this study used the IBM SPSS Statistic 26 application. This application supports the calculation of descriptive statistics such as mean, standard deviation and inferential statistics (Morgan et al., 2019). The data was then tested to test the level of homogeneity of the regression coefficient in all experimental groups for the requirements for conducting covariance analysis (Rabbani et al., 2023). Obtained from homogeneity test of the linear regression coefficient can be seen in table 5.

Table 5. Linear Coefficient Homogeneity Test

Parameter Estimates				
Dependent Variable	**Post-test of Learning Outcomes**			
Parameter	**B**	**Std. Error**	**Sig.**	**Partial Eta Squared**
Intercept	44.140	1.053	.000	.953
Pre-test	.533	.019	.000	.904
Class=1	10.747	.533	.000	.824
Class=2	0[a]			

Based on table 5, the sig value is 0.000 <0.05, which means that the data of the homogeneity of the linear regression coefficient from the data of the two samples can be said to be homogeneous. Therefore, the results of the normality test, the results of the test and the homogeneity of the linear regression coefficient, this calculation will be continued with a hypothesis test using ANCOVA. Hypothesis testing is carried out to determine whether there is an effect of lesson plans using the Multimedia teaching module (teaching quality) on student learning outcomes. Details of the SPSS output results for the ANCOVA test are presented in Table 7.

Table 6. ANCOVA Hypothesis Test Results

Tests of Between-Subjects Effects						
Dependent Variable: Post-test of Learning Outcomes						
Source	**Type III Sum of Squares**	**DF**	**Mean Square**	**F**	**Sig.**	**Ket**
Corrected Model	5686.786[a]	2	2843.393	485.703	.000	
Intercept	15984.865	1	15984.865	2730.502	.000	
Pretest	4771.575	1	4771.575	815.071	.000	
Class	2383.977	1	2383.977	407.226	.000	H_0 rejected H_a accepted
Error	509.314	87	5.854			
Total	520125.000	90				

Based on the data in Table 6, the significance value (sig) is 0.000, which is smaller than 0.05. This indicates that the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. Thus, it can be concluded that 1 lesson plan using multimedia teaching modules significantly affects student learning outcomes (teaching quality). Based on the research results that have been achieved, lesson plans affect the quality of teacher teaching. This can be seen from the percentage of teacher observations carried out by the principal. This observation activity was carried out during the academic supervision program by the principal. Before carrying out the observation, the teacher and principal prepared a lesson plan. According to Sahudi and Ma'arif (2024), collaborative supervision strategies have been shown to be more effective in improving the quality of learning, create a results-oriented learning atmosphere, and advancing the overall quality of education. Lesson plans are carried out by creating learning tools. In line with Ali and Saputra (2023), the teacher prepares the lesson plan before learning can be appropriately implemented following the plan's objectives. The learning tools that must be developed by teachers are teaching modules, teaching materials, learning media, LKPD, grids and assessment instruments (Muhardini et al., 2023). According to Afriza et al. (2024), before a teacher interacts with students in the classroom, they have an important responsibility to develop a comprehensive lesson plan. In line with Lase (2020), lesson plans are a crucial foundation in every teaching and learning process, becoming a mandatory guide for every teacher. With careful planning, teachers can carry out teaching and learning activities efficiently and have evaluation tools to continue to improve and enhance the quality of teaching in the future (Fakhri, 2023).

Likewise, when the teaching process continues. teacher ability plays a crucial role. Quality teachers will produce quality students. Therefore, advancing the quality of learning is a must for every teacher to lead to the achievement of educational goals. The quality of a teacher's teaching is reflected in their ability to convey knowledge to students in accordance with the established performance standards, thus producing quality students (Mediatati & Jati, 2022). In other words, teachers must continue to strive to improve their teaching competence to positively affect students' development and progress (Apriliana, 2022). According to research findings conducted at an elementary school in Sukasari District, teachers' implementation of lesson plans showed positive results, with 86.58% of teachers consistently planning learning before starting class. The professionalism of teachers in this school is also classified as very good, as evidenced by the achievement of the expected learning objectives. This success is supported by the competence of quality teachers and understanding of material that is in line with the curriculum. Lesson plans significantly affect the quality of teacher teaching, which is reflected in the very good level of student understanding. Thus, lesson plans affect improving teacher quality.

Lesson plans to improve teacher quality in this learning have an impact on students. The difference in the average value of Student learning outcomes between the experimental class and the control class proves this. It can be seen in Table 2 that the average post-test score for the experimental

class is 78.75 and the control class is 72.37. With these learning outcomes, lesson plans with teaching quality affect student learning outcomes. Based on the hypothesis test, it is It was found that Student learning outcomes between the experimental and control classes differed significantly. The difference in learning outcomes is because learning activities in the control class are taught using ordinary teaching modules where learning activities are still centered on the teacher. In contrast to the experimental class taught using multimedia-based lesson plans, learning becomes interesting, active, fun, interactive, and IT-based (Sari & Hanif, 2023).

From the results of the data analysis, it can be concluded that lesson plans on the quality of teacher teaching positively impact student learning outcomes. This is evident from the significant difference between the learning outcomes of students taught using multimedia-based lesson plans and those taught using conventional model lesson plans. Statistical analysis using the ANCOVA test showed a significance value of 0.000 <0.05. Thus, the research hypothesis is proven and the null hypothesis is not supported. In other words, using multimedia-based lesson plans significantly improves student learning outcomes when compared with conventional teaching methods.

This research data reveals provide important contributions to the development of educational theory, especially in the context of technology-based lesson plans. By showing that multimedia-based lesson plans can significantly improve students' critical thinking skills, this study strengthens the argument that educational technology can enrich the learning experience and improve deeper learning outcomes. In line with Marnita et al. (2023), this situation requires teachers to be proficient in using digital technology and communication media and in accessing, using, and evaluating student learning outcomes. In practice, these findings strongly recommend that teachers and policymakers integrate further technology, especially multimedia, into daily lesson plans. In addition, these results indicate that developing students' critical thinking skills depends on a lecture-based teaching approach and learning designs that involve various active, interactive, and technology-based learning strategies. Therefore, this study encourages the implementation of policies that support teacher training in using innovative multimedia-based learning tools, as well as the development of curricula that accommodate the need for 21st-century skills that focus on critical thinking skills. This is relevant to Fakhri (2023) that teachers need to develop lesson plans that are under the needs of the 21st century, increasing student engagement, developing 21st-century skills, and continuous monitoring and evaluation. In line with Dharmawati et al. (2023), with the development of technology 4.0, teachers need to utilize relevant digital tools and platforms effectively in the learning process.

CONCLUSION

This study shows that lesson plans on the quality of teacher teaching positively affect student learning outcomes. This is proven by 86.58% of teachers consistently planning learning to improve quality. This study is also strengthened by the results of the ANCOVA analysis with a sig value of 0.000 <0.05, confirming that the experimental group that implemented multimedia-based planning showed much better results than the control group. This study strengthens the importance of innovation in lesson plans, which includes aspects of content and the use of technology to increase students' active participation in learning. The use of multimedia in lesson plans has been shown to encourage students to think more critically and actively, which has a crucial impact on efforts to advance the quality of education, especially in the context of learning in the 21st century. The results of this study reveal that several suggestions can be made. First, for educators and policymakers, it is advisable to integrate multimedia-based lesson plans into a broader curriculum because this has been shown to optimize the quality of learning and student learning outcomes significantly. Second, for future research, it is recommended that the scope of the study be expanded to include more schools from different regions and socio-economic backgrounds to gain a deeper understanding of the implementation of

multimedia-based planning in various contexts. Furthermore, further research must be conducted to explore the long-term impact of technology use in learning and identify other factors that may affect student learning outcomes, such as teachers' experience and skills in managing learning technology. Finally, given the importance of equitable access to technology, inclusive and equitable education policies need to be strengthened to ensure that all students can benefit from multimedia-based lesson plans without obstacles to technology access.

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