

# The Influence of Learning Facility Utilization on Learning Quality: A Quantitative Study of Public Senior High Schools in Serang Regency, Banten, Indonesia

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## ABSTRACT

The quality of learning remains a key indicator of educational effectiveness, particularly in secondary education. One factor assumed to contribute significantly to learning quality is the effective utilization of learning facilities. However, empirical evidence quantifying this relationship in public senior high schools remains limited. This study employed a quantitative correlational design to examine the relationship between learning facility utilization and learning quality among students in public senior high schools in Serang Regency, Indonesia. Data were collected from 292 students selected through simple random sampling. A structured questionnaire was used as the research instrument. Data analysis included normality and homogeneity tests, Pearson correlation analysis, and simple linear regression. The results indicated that the data met the assumptions for parametric analysis. A strong positive relationship was found between learning facility utilization and learning quality ( $r = 0.85$ ). The regression analysis produced the equation  $\hat{Y} = 30.72 + 0.70X$ , indicating that increased utilization of learning facilities was associated with higher learning quality. The coefficient of determination ( $R^2 = 0.85$ ) showed that 85% of the variance in learning quality was explained by learning facility utilization. The t-test confirmed that this relationship was statistically significant at the 0.01 level. These findings demonstrate that effective utilization of learning facilities plays a crucial role in improving learning quality. Optimizing school facilities can therefore enhance the effectiveness of teaching and learning processes and should be prioritized in educational management and policy development.

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## 1. INTRODUCTION

The quality of learning in Indonesia remains a primary focus in efforts to improve national education standards. Quality education is the foundation for developing superior, creative, and globally competitive human resources. Although the government has implemented various strategic programs and policies, the challenges of meeting international education standards remain significant.

The supporting indicators for improving learning quality in the Education Report, based on the results of the National Assessment, cover three main aspects: classroom management, affective support, and cognitive activation (Pusmenjar Kemdikbud, 2022: 4). With these indicators, curriculum implementation can be adaptive, efficient, and aligned with school needs, thus promoting better learning quality (Susanti et al., 2022: 134-04). The role of educators in education is crucial and must be optimized to achieve quality education in various educational institutions (Lestari, 2024: 2). Based on the results of the 2022 PISA (PISA) survey, Indonesian students performed below the international average. This indicates a significant gap in learning achievement, mastery of basic skills, and development of critical thinking skills necessary for global competition.

In reality, the quality of learning carried out by educators as part of service improvement efforts still falls short of expectations. Educators, who should be responsible in carrying out learning, often struggle with discipline, leave class unsupervised, or participate in other activities unrelated to teaching. According to the Education Report, the quality of learning is still rated "yellow," meaning moderate. A moderate rating implies that classroom conditions have become more conducive, and that educators' psychological support and understanding of students have improved (source: National Assessment Results, 2023). Schools still lack comprehensive learning facilities. Many educators have not developed innovative learning media, while some schools have adequate infrastructure but fail to utilize it effectively in teaching. This condition contributes to conventional learning processes, thus hindering optimal learning quality.

Learning facilities are a crucial component of educational infrastructure. These facilities encompass all school resources to support the teaching and learning process (Nuzli, 2021: 58). These facilities also include learning media, internet access, and the financial resources necessary to facilitate independent learning (Patimah & Sumartini, 2022: 993). Aligning the management of learning facilities with the school's vision and mission is crucial for achieving an effective, efficient, and sustainable educational process (Abdurrohman, Mizan, & Noviani, 2023). Empirical evidence shows that learning facilities positively impact student learning motivation (Purnomo et al., 2020: 600). Adequate learning facilities are crucial for effective secondary education, significantly supporting the development of student potential, with local governments playing a crucial role in providing the necessary resources and assistance (Fanani, 2023: 38).

Furthermore, research shows that a well-equipped learning environment and supportive parenting practices significantly increase student motivation, ultimately improving academic achievement (Wahyuningtyas et al., 2022: 2). The quality of teaching and the adequacy of facilities have been shown to significantly influence student learning motivation (Darman, 2023: 36). Research shows that the availability of adequate learning facilities and a supportive family environment have a positive and significant effect on student learning motivation (Mulyani et al., 2021: 89). Learning facilities encompass a systematic approach that encompasses essential elements such as strategic planning, procurement processes, inventory control, routine maintenance, and the systematic disposal of obsolete or ineffective resources. This comprehensive management framework significantly impacts the effectiveness of teaching and learning outcomes (Yahya et al., 2023: 4). Specifically, empirical studies demonstrate a positive relationship between the utilization of adequate learning facilities and student academic achievement in science subjects. However, the availability of laboratory equipment and limited audiovisual media pose significant barriers that negatively impact student learning outcomes (Huda, 2022).

Empirical evidence shows that software development systems deliver significantly better results than video-based tutorials in several key areas: time efficiency, ease of controlled learning, motivation to learn, comprehensive engagement in the editor, and the quality of the developed game levels. These interactive systems not only facilitate deeper and more sustained engagement in the creative process but also increase the technical precision of game design outcomes (Pribadi et al., 2023: 133). These experts' descriptions demonstrate that utilizing learning facilities is an educator's effort to optimize systematically managed infrastructure to support the learning process and increase student motivation.

A supportive learning environment, which includes access to adequate infrastructure and relevant technology, enables students to become more independent, motivated, and efficient in developing the skills needed during the learning process (Finn et al., 2024: 22). Accessibility, as an integral part of improving learning facilities, ensures that every student can efficiently and equitably access and utilize educational resources (Tartaglia & Ahmadzai, 2024). A supportive and positive learning environment plays a crucial role in reducing negative behavior and victimization among students, creating a safe and comfortable environment for learning (Tay & Zamore, 2024). Improving the learning environment is crucial to supporting students' social and emotional development. To improve the quality of education and students' academic enthusiasm, an overhaul of the school's pedagogical paradigm through a dedicated team that shapes this paradigm is necessary (Moghadas & Keikavoosi-Arani, 2023: 1).

Research conducted to determine the effectiveness of learning approaches in improving the quality of education has identified seven pedagogical approaches—guided inquiry, inquiry-based learning, problem-based learning (PBL), project-based learning (PjBL), and structured learning cycles—as effective strategies for improving students' scientific process skills in Indonesia, allowing for adaptive and context-specific implementation (Syazali, Erfan, & Khair, 2021). Effective management of learning facilities is crucial for optimizing learning outcomes, which includes careful planning, procurement, utilization, maintenance, inventory control, decommissioning processes, and supervisory responsibilities (Singgih). This study proves that learning facilities significantly influence student motivation (Hasanah, Oktavia, Silaturrahmi, & Jakarta, 2023). Furthermore, the analysis revealed that well-structured learning facilities are positively correlated with the quality of learning and training (Thi Hong Thanh et al., 2023: 28).

The findings of this study are expected to contribute to evidence-based policy development, offering recommendations for schools, educators, and the local Education Office to optimize facility use and strengthen learning quality in senior high schools across Serang Regency. Based on the above background, the researcher conducted a study on the Effect of Learning Facility Utilization on Learning Quality: A Quantitative Study in Public Senior High Schools in Serang Regency, Banten, Indonesia. Research Question: Does the utilization of learning facilities have a significant relationship with learning quality in public senior high schools in Serang Regency?. This study hypothesizes there is a significant positive relationship between learning facility utilization and learning quality. Therefore, this study aims to determine whether there is a relationship between the utilization of learning facilities and the quality of learning. The research method used is quantitative correlation. Thus, the results of this study are expected to provide insight into the development of educational policies in Serang Regency, especially at the high school level. In addition, this study is expected to provide recommendations to the Education Office, schools, and educators to improve the quality of learning in public senior high schools in Serang Regency.

## 2. METHODS

### 2.1 Research Design

This study used a quantitative approach with a descriptive correlational design. This quantitative approach was chosen because this study focuses on numerical data processed using

statistical techniques to test relationships between variables. The descriptive correlational design aims to determine the relationship between independent and dependent variables without manipulating or treating the research subjects. This design is suitable for describing factual conditions in the field and determining the direction and strength of relationships between variables based on empirical data.

## 2.2 Population and Sampling

The population in this study was all public high school students in Serang Regency for the 2024/2025 academic year, totaling  $N = 1.082$ . To determine the sample size, the researcher used the Slovin formula because the population size was known with certainty and the researcher wanted to obtain a representative sample with a certain margin of error.

The Slovin formula is:

$$n = \frac{N}{1 + N(e)^2}$$

Description:

$n$  = number of samples

$N$  = population size

$e$  = margin of error

With a margin of error of  $e = 0.05$  (5%), the calculation is:

$$n = \frac{1082}{1 + 1082(0,05)^2} = \frac{1082}{1 + 2,705} = \frac{1082}{3,705} = 292,16$$

Accordingly, the calculated sample size was rounded to 292 respondents. The study employed Simple Random Sampling as the sampling technique. This method was selected because each member of the population had an equal probability of being included in the sample, the population was considered relatively homogeneous in terms of key characteristics such as curriculum, educational level, and regional context, and the selection process was conducted randomly without subjective bias, using a random number generator. Given the homogeneity of the population, sampling was carried out without stratification or quota allocation.

The Slovin formula was used to determine the sample size for several reasons. First, the population size was known with certainty ( $N = 1.082$ ). Second, the population variance was unknown. Third, the formula provides a simple and efficient method for estimating a representative sample size. Finally, the Slovin formula is commonly applied in social, educational, and management research to obtain reliable sample estimates within an acceptable margin of error.

The parameters applied in this study were a population size of  $N = 1.082$ , an error tolerance of  $e = 0.05$  (5%), and a resulting sample size of  $n = 292$ . Therefore, a sample of 292 respondents was considered sufficient to represent the population with a 95% confidence level.

## 2.3 Instrument

The research instrument used in this study was a structured questionnaire developed based on theoretical indicators relevant to each research variable. The questionnaire employed a closed-ended format, requiring respondents to select one response from a set of predetermined answer options.

Responses were measured using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The use of this scale allowed for systematic quantification of respondents' perceptions and facilitated statistical analysis. The questionnaire items were constructed in accordance with established theories and prior empirical studies related to learning facility utilization and learning quality.

## 2.4 Data Analysis

Data analysis began with a normality test using the Liliefors method, which compares the maximum difference between the empirical cumulative distribution and the theoretical cumulative

distribution to the critical value in the Liliefors table. To meet the assumptions of parametric analysis, a homogeneity of variance test was subsequently conducted using Levene's test to assess the uniformity of variance across groups. Homogeneity of variance is a key prerequisite for parametric statistical procedures, including the *t*-test, regression analysis, and analysis of variance (ANOVA), ensuring that observed differences are attributable to group effects rather than variance inequality.

To examine the relationship between variables, Pearson's correlation analysis was applied to measure the strength and direction of the association between the utilization of learning facilities and learning quality. Furthermore, simple linear regression analysis was employed to determine the effect of learning facility utilization on learning quality using the regression model  $\hat{Y} = a + bX$ .

The validity of the research instrument was established through content validity, which involved expert judgment to ensure the relevance and representativeness of the questionnaire items. Instrument reliability was assessed using Cronbach's alpha coefficient to confirm internal consistency.

### 2.5 Validity and Reliability

Item validity was examined using the Pearson Product-Moment Correlation method by correlating each item score with the total score of the instrument. The validity of each item was determined by comparing the obtained correlation coefficient ( $r_{obs}$ ) with the critical value in the *r* table at a significance level of  $\alpha = 0.05$ . An item was considered valid if  $r_{obs} \geq r_{table}$ , whereas items with  $r_{obs} < r_{table}$  were deemed invalid and excluded from further analysis.

## 3. FINDINGS AND DISCUSSION

Based on the variables studied, the data were categorized into two parts: Learning Quality (Y) and Learning Facility Utilization (X). The data represent the measured responses of sample participants to distributed questionnaires and tests. The quantification process involved assigning a score to each item in the completed questionnaires and tests. The presented numerical values, which were processed from the raw data using descriptive statistics, depict the mean, standard deviation, median, and frequency distribution, accompanied by a histogram..

### 3.1. Learning Quality

The total number of Learning Quality data points is 292, with a total score of 23,509. Based on the calculations, the statistical values are as follows: Mean score = 80.51, Mode = 80.00, Median = 81.00, Standard deviation = 11.71, Lowest observed score = 61.00, Highest observed score = 100.00, Theoretical score range = 20 to 100. Of the 292 samples, 35 respondents or 11.99% were in the average group, 110 respondents or 37.67% were in the above-average group, and 147 respondents or 50.34% were in the below-average group.

### 3.2. Utilization of Learning Facilities

The number of data entries for Utilization of Learning Facilities is 292, with a total score of 20,718. Based on the calculation, the average score for the Utilization of Learning Facilities variable is 70.95, with a mode of 54, a median of 71.00, and a standard deviation of 11.55. Empirically, the lowest score is 51, and the highest is 90. The theoretical score range is between 18 and 90. Of the 292 samples, 31 respondents or 10.62% are in the average group, 139 respondents or 47.60% are in the above-average group, and 122 respondents or 41.78% are in the below-average group.

### 3.3. Analysis Prerequisites Testing

#### 3.3.1. Normality Test

Based on the calculation results, the highest  $a$  or  $a_h$  value obtained is 0.066. This value is smaller than  $D_{table}$  ( $n = 292; \alpha = 0.05$ ) = 0.079. Since  $a_{max}$  (0.066) <  $D_{table}$  (0.079), the data for Y comes from a normally distributed population. Normality Test for Student Learning Activities (X). Based on the calculation results, the highest  $a$ - or  $a_h$  value obtained is 0.075. This value is smaller than  $D_{table}$  ( $n =$

292;  $\alpha = 0.05$ ) = 0.079. Since  $a_{\max}$  (0.075) <  $D_{\text{table}}$  (0.079), the data for X comes from a normally distributed population. A summary of the normality test results can be seen in the following table.

**Table 3.** Summary of Normality Test Analysis

Variable	N	$a_{\max}$	Critical Value		Description
			$\alpha = 0.05$	$\alpha = 0.01$	
Y	292	0.066	0.079	0.095	Normal
X	292	0.075	0.079	0.095	Normal

Explanation:

Y: Student Learning Achievement

X: Student Learning Activity

### 3.3.2. Homogeneity Test of Variance Y on X

The results of the calculation of the homogeneity test of variance of Y against X produce  $F_{\text{count}} = 1.07$ . The critical F-table value for  $df = 292$  at  $\alpha = 0.05$  is 1.21, and at  $\alpha = 0.01$  is 1.31. Because  $F_{\text{count}} (1.07) < F_{\text{table}} (1.21)$ ,  $H_0$  is accepted, which means that the variance between Y groups based on X is homogeneous. The results of the homogeneity test of variance are summarized in the following table:

**Table 4.** Homogeneity Test Results using F-test

Variance Y on X	$\chi^2_{\text{calculated}}$	$\chi^2_{\text{table}} (\alpha = 0.05)$	$\chi^2_{\text{table}} (\alpha = 0.01)$	Description
X	1.07	1.21	1.31	Homogen

Description:

Y = Student Learning Achievement

X = Student Learning Activity

The homogeneity test results of variance are summarized in the following table:

**Table 5.** Homogeneity Test Results using Levene's Test

Variance Y on X	$\chi^2_{\text{calculated}}$	$\chi^2_{\text{table}} (\alpha = 0.05)$	$\chi^2_{\text{table}} (\alpha = 0.01)$	Description
X	0.962	1	0.327	Homogen

Description:

Y = Learning Quality

X1 = Utilization of Learning Facilities

Based on the output table of the Homogeneity of Variance Test above, the significance value (Sig.) for the Learning Quality variable is 0.327. Since the significance value of  $0.327 > 0.05$ , according to the decision rule in the homogeneity test, it can be concluded that the variance of the Learning Quality data is homogeneous.

### 3.4. Hypothesis Testing on the Relationship Between Utilization of Learning Facilities and Learning Quality

The first hypothesis of this study states a positive relationship between Learning Facility Utilization (X) and Learning Quality (Y). A simple regression analysis based on Learning Quality data on Learning Facility Utilization yielded a regression coefficient of  $b = 0.70$  and a constant of  $a = 30.72$ . Therefore, the relationship between the two variables can be expressed through the following regression equation:  $\hat{Y} = 30.72 + 0.70X$ .

Before using this regression equation for predictive purposes, it must meet the requirements for significance and linearity testing. Therefore, the F-test determines the degree of significance and linearity of the regression. The results are shown in the following table :

**Table 6.** ANOVA Table for Significance and Linearity Testing of Regression Equation

Regression $\hat{Y} = 30.72 + 0.70X$						
Source of Variance	df	SS	MS	F <sub>calculated</sub>	F <sub>table</sub> ( $\alpha = 0.05$ )	F <sub>table</sub> ( $\alpha = 0.01$ )
Total	60	1929031				
Regression (a)	1	1892716.03	19106.18	321.97**	3.87**	6.72
Regression (b/a)	1	19106.18	59.34			
Residual	290	17208.79				
Lack of Fit	38	3285.97	86.47	1.56 <sup>ns</sup>	1.45 <sup>ns</sup>	1.69
Error	252	13922.83	55.25			

Notes:

\*\* = Significant regression ( $F_h = 321.97 > F_t = 6.72$ ) at  $\alpha = 0.01$

Ns = Non-significant = Linear regression ( $F_h = 1.56 < F_t = 1.69$ ) at  $\alpha = 0.01$

df = Degrees of freedom

SS = Sum of Squares

MS = Mean Squares

Based on the results of the significance and linearity tests in the table above, it can be concluded that the regression equation  $\hat{Y} = 30.72 + 0.70X$  is very significant and linear. This means that if the Utilization of Learning Facilities increases by one point, then the Quality of Learning tends to increase by 0.70 points, with a constant of 30.72. The strong relationship between the Utilization of Learning Facilities (X) and the Quality of Learning (Y) is indicated by the correlation coefficient ( $r_{y1}$ ) = 0.85. To test the significance of the correlation coefficient, a t-test was conducted, which produced t count = 6.27, while t table at  $\alpha = 0.01$  and  $df = 291$  was 1.31. Because t count (6.27) > t table (1.31), the correlation coefficient  $r_{y1}$  is very significant. To better understand the relationship between X and Y, see the following table.

**Table 7.** Test Results for the Significance of the Correlation Coefficient Between X and Y

n	$r_{y1}$	t <sub>calculated</sub>	t <sub>table</sub> ( $\alpha = 0.05$ )	t <sub>table</sub> ( $\alpha = 0.01$ )
292	0.85	6.27**	1.21	1.31

Description:

\*\* = The correlation coefficient is highly significant ( $t_h = 6.27 > t_t = 1.31$ ) at  $\alpha = 0.01$

$r_{y1}$  = Correlation coefficient between X and Y

Based on the results of the significance test (as shown in the table above), the correlation coefficient between the Utilization of Learning Facilities and the Quality of Learning was proven to be very significant. Thus, the research hypothesis stating that there is a positive relationship between the utilization of learning facilities and the quality of learning was proven correct. This means that the higher the level of utilization of learning facilities by a teacher, the higher the quality of learning produced. Furthermore, the coefficient of determination, which is the square of the correlation coefficient between Student Learning Activities and Student Learning Achievement, was obtained  $(r_{y1})^2 = (0.85)^2 = 0.85$ . This indicates that 85% of the variation in the Quality of Learning can be explained by variations in the Utilization of Learning Facilities. The remaining 15% is likely influenced by other factors outside of these variables.

## Discussion

The findings of this study demonstrate a strong and statistically significant relationship between the utilization of learning facilities and learning quality, as indicated by a high correlation coefficient ( $r = 0.85$ ) and a substantial coefficient of determination ( $R^2 = 0.85$ ). This suggests that effective use of learning facilities plays a critical role in shaping the quality of classroom learning. These results align with previous studies indicating that well-managed and optimally utilized educational facilities enhance instructional effectiveness, student engagement, and learning outcomes (Husain et al., 2022; Wulandari & Uwameiye, 2023). Adequate facilities not only support instructional delivery but also create a conducive learning environment that fosters student participation and comprehension.

The regression analysis further revealed that learning facility utilization significantly predicts learning quality, as reflected in the regression equation  $\hat{Y} = 30.72 + 0.70X$ . This finding implies that incremental improvements in the use of learning facilities are associated with measurable gains in learning quality. Similar conclusions have been reported in earlier research, which emphasizes that the presence and proper utilization of facilities such as classrooms, learning media, laboratories, and technology resources significantly contribute to improved learning processes and outcomes (Fanani, 2023; Pangestu & Hariri, 2022). Importantly, this study reinforces the argument that facilities alone are insufficient; rather, their pedagogically meaningful utilization by educators determines their impact on learning quality.

Despite the strong explanatory power of learning facility utilization, the results also indicate that 15% of the variance in learning quality is influenced by other factors beyond the scope of this study. This finding is consistent with educational research suggesting that learning quality is a multidimensional construct affected by variables such as teacher competence, instructional strategies, student motivation, and school leadership (König et al., 2021; Susanti et al., 2022). Therefore, while optimizing learning facilities should be a strategic priority for schools and policymakers, it should be complemented by efforts to enhance teacher capacity and instructional quality. Future research is recommended to incorporate additional variables and mixed-method approaches to provide a more comprehensive understanding of the factors influencing learning quality.

## 4. CONCLUSION

This study concludes that the effective utilization of learning facilities has a strong and positive influence on learning quality, as evidenced by the significant statistical relationship between the two variables. The findings indicate that optimizing the use of educational facilities is a key factor in enhancing the effectiveness of teaching and learning processes in schools and can serve as an important basis for educational planning and policy formulation. Nevertheless, this study is limited by its focus on a single independent variable and a specific regional context, which may restrict the generalizability of the findings. Future research is therefore recommended to incorporate additional variables, such as teacher competence, student motivation, and school management support, to provide a more comprehensive understanding of factors influencing learning quality. Moreover, employing qualitative or mixed-method approaches and conducting studies across different educational levels or regions would offer deeper insights into the contextual and behavioral dimensions of learning facility utilization and strengthen the external validity of future findings.

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