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The Influence of Leadership, Teacher Performance, and Facilities and Infrastructure Management on the Learning Quality at Vocational High Schools in Indragiri Hilir Regency

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A B S T R A C T

This study examines the influence of leadership, teacher performance, and facilities and infrastructure management on learning quality at vocational high schools (SMKN) in Indragiri Hilir Regency. Using a quantitative correlational design, data were collected from 153 teachers through questionnaires and interviews, analyzed via multiple regression. The findings reveal that each variable significantly influences learning quality, with a combined contribution of 87%. Effective leadership, teacher professionalism, and optimized infrastructure management are key to improving education. The study recommends proactive leadership, enhanced teacher professionalism, and better resource management to strengthen learning outcomes. These findings highlight the importance of comprehensive school management in ensuring high-quality education.

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INTRODUCTION

The quality of learning is a fundamental aspect of improving education in Indonesia. An effective teaching and learning process ensures that students attain the necessary competencies while fostering motivation and engagement. Learning quality also serves as a benchmark for assessing educational feasibility and implementation. According to Sanjaya (2016), achieving high-quality learning requires an interactive and innovative approach. Suyono and Hariyanto (2016) emphasize that qualified human resources—those with knowledge, skills, and self-awareness—are the foundation of effective learning. Mulyasa (2016) further highlights that active engagement between teachers and students within a supportive environment is key to meeting educational goals.

While teachers and students are central to the learning process, leadership plays an equally significant role. The principal is responsible for guiding and supporting teachers, ensuring that teaching activities align with educational objectives. Effective leadership enhances school operations and promotes professional teacher performance. Zheng et al. (2017) argue that strong school leadership is crucial for driving school effectiveness and continuous improvement. A principal's ability to lead and manage directly impacts the overall learning experience.

To improve school quality, strategic leadership approaches must be implemented. School leaders should be empowered with decision-making authority while fostering collaboration with teachers, students, and the wider school community. Given the rapid evolution of education, principals must balance managerial responsibilities with leadership innovation. Anticipating change and implementing new initiatives are essential for ensuring long-term educational improvement. Principals should adopt transformative strategies that encourage creativity and enhance student learning outcomes.

Research supports the strong influence of school leadership on learning quality. Diana et al. (2021) found that principal leadership and teacher performance collectively contributed to 94.2% of learning quality in junior high schools in Muaradua District. Similarly, Fikriadi et al. (2017) identified a 13.1% contribution of school leadership and committees to learning quality at SMAN 1 Tanjung, North Lombok. These findings underscore the critical role of leadership and teacher effectiveness in shaping educational outcomes.

A pre-survey at Tembilahan Hulu 1 Vocational High School in March 2024 revealed several leadership concerns. Among 38 surveyed teachers, 26.31% believed the principal lacked commitment and failed to establish a strong school culture. Additionally, 31.58% felt that the principal did not sufficiently monitor and evaluate learning activities, negatively impacting classroom quality. Furthermore, 39.47% reported a lack of clear direction for improving learning, while 52.63% noted insufficient encouragement for innovation in teaching. These findings indicate the need for a more proactive leadership approach to support teacher development and enhance learning effectiveness.

Beyond leadership, teacher performance plays a crucial role in learning quality. Teachers design, implement, and assess learning processes, directly influencing student achievement. Wahyudi (2018) asserts that professional teaching requires not only academic ability but also dedication and responsibility. A survey at Indragiri Hilir 1 Vocational High School indicated weaknesses in lesson planning, classroom management, and evaluation processes. Some teachers struggled to prepare lesson plans independently, lacked mastery of teaching materials, and failed to manage classroom time effectively. These deficiencies highlight the need for targeted teacher training and professional development.

Infrastructure and facility management also significantly affect learning quality. Schools must meet national education standards to create conducive learning environments. At Indragiri Hilir Vocational High School, facilities play a role in student satisfaction and academic achievement. However, some students still struggle with low performance, and extracurricular support remains inadequate. Many teachers have yet to fully utilize available resources, highlighting the need for further training in effective facility use. Given these factors, this study examines the influence of leadership, teacher performance, and facility management on learning quality at Indragiri Hilir Vocational High School. It aims to determine both individual and combined effects, providing insights into improving overall educational outcomes.

METHODS

This study employs an ex post facto research design, which examines cause-and-effect relationships without direct manipulation or intervention by the researcher. The study focuses on leadership, teacher performance, and facility management as independent variables, while learning quality serves as the dependent variable. Conducted at Indragiri Hilir Regency Vocational High School, the research took place in two phases: a preliminary survey in November 2023, followed by data collection through questionnaires between April and June 2024. The total population included 277 vocational school teachers from eight schools, with a sample size of 164 teachers selected using simple random sampling based on Slovin's formula with a 10% margin of error.

Data collection utilized questionnaires measured on a Likert scale, assessing respondents' levels of agreement with positive and negative statements. Validity and reliability tests ensured the accuracy and consistency of the instruments. The research applied descriptive and inferential statistical analyses using Microsoft Excel and SPSS 24, with descriptive analysis summarizing respondent profiles and research variables. Inferential analysis involved classical assumption tests, multiple linear regression, t-tests, and F-tests to evaluate the impact of independent variables on the dependent variable. Additionally, the coefficient of determination (R^2) test was conducted to measure the influence of independent variables on learning quality.

RESULTS

This study involves three variables: Leadership (X1), Teacher Performance (X2), and Facilities and Infrastructure Management (X3) as independent variables, while learning quality serves as the dependent variable. Data collection was conducted through questionnaires completed directly by respondents, namely teachers at Indragiri Hilir Regency Vocational High School. The descriptive data analysis aims to provide an overview of each variable, including the mean, median, mode, standard deviation, variance, minimum score, and maximum score. The following presents a detailed explanation of the descriptive data analysis conducted.

Descriptive Analysis

Leadership (X1)

The school principal's leadership variable was measured using a questionnaire consisting of 37 items, which were administered to 164 respondents. Based on data analysis using SPSS 27 for Windows, the obtained results are as follows:

Tabel 1. Descriptive Statistics of Leadership (X1)

Descriptive Statistics	
N	164
Mean	169,54
Median	171,00
Modus	174
Standard Deviation	12,033
Variance	144,790
Range	37
Lowest Score	148
Highest Score	185

Based on the table above, the leadership variable measured has a minimum value of 148 and a maximum value of 185, with a score range of 37. This variable has a mean of 169.54 and a standard deviation of 12.033. The variance of the data is 144.790. It can be stated that the distribution of respondents' answers regarding the leadership variable is relatively even, as indicated by the standard deviation, which is lower than the mean value.

Teacher Performance (X2)

The Teacher Performance variable consists of 22 statement items measured using a 5-point Likert scale, administered to 164 respondents. Based on the data analysis using SPSS 27 for Windows, the results obtained are as follows:

Table 2. Descriptive Statistics of Teacher Performance

Descriptive Statistics	
N	164
Mean	132,96
Median	132,96
Modus	126
Standard Deviation	10,522
Variance	110,723
Range	42
Lowest Score	108
Highest Score	150

Based on the table above, the Teacher Performance variable has a minimum value of 108 and a maximum value of 150, with a score range of 42. This variable has a mean of 132.96 and a standard deviation of 10.522. The data variance is 110.723. It can be concluded that the distribution of respondents' answers regarding the Teacher Performance variable is relatively even, as indicated by the standard deviation, which is lower than the mean value.

The Facilities and Infrastructure Management

The Facilities and Infrastructure Management variable consists of 26 statement items using a 5-point Likert scale, administered to 164 respondents. Based on data calculations using SPSS 27 for Windows, the results obtained are as follows:

Table 3. Descriptive Statistics of the Facilities and Infrastructure Management

Descriptive Statistics	
N	164
Mean	118,74
Median	121,00
Modus	130
Standard Deviation	11,310
Variance	127,925
Range	52
Lowest Score	78
Highest Score	130

Based on the table above, the infrastructure management variable has a minimum value of 78 and a maximum value of 130, with a score range of 52. This variable has a mean value of 118.74 and a standard deviation of 11.310. The

variance of the data is 127.925. It can be concluded that the distribution of respondents' responses regarding the infrastructure management variable is relatively evenly spread, as indicated by the standard deviation being lower than the mean value.

The Learning Quality

The Learning Quality variable consists of 30 statement items using a 5-point Likert scale, which was administered to 164 respondents. Based on the data analysis conducted using SPSS 27 for Windows, the results obtained are as follows:

Table 4. Descriptive Statistics of Learning Quality

Descriptive Statistics	
N	164
Mean	136,88
Median	138,00
Modus	135
Standard Deviation	9,942
Variance	98,839
Range	36
Lowest Score	114
Highest Score	150

Based on the table above, the Learning Quality variable has a minimum value of 114 and a maximum value of 150, with a score range of 36. This variable has a mean of 136.88 and a standard deviation of 9.942. The variance of the data is 98.839. It can be stated that the distribution of respondents' responses regarding the Learning Quality variable is relatively even, as indicated by the standard deviation, which is lower than the mean value.

Hypothesis Testing Results

Simple Linear Regression Analysis

A simple linear regression analysis was conducted to determine the influence of independent variables on the dependent variable. The equation $\hat{Y} = a + bX$ was calculated to assess the extent of the effect exerted by each variable.

Leadership (X1)

The level of learning quality (Y) can be predicted based on leadership (X1) using the analysis results from SPSS version 27, as presented in the following table:

Table 5. Results of Leadership Variable Analysis

Variable	Unstandardized Coefficient Beta	Standardized Coefficient	t	Sig
Constant	63,507		6,757	,000
Leadership	,433	,524	7,827	,000

Based on the Coefficient table above, the constant value (a) is 63.507, and the principal's leadership coefficient (b) is 0.433. Thus, the regression equation can be written as $Y' = a + bX$ or $Y' = 63.507 + 0.433X1$. This regression equation indicates that the regression coefficient (b) of 0.433 means that each one-unit increase in the principal's leadership score will increase the learning quality score by 0.433. The constant value of 63.507 signifies an initial positive influence on the dependent variable, which is learning quality.

The analysis results also indicate that the significance value (sig) is 0.000, which is lower than 0.05. This suggests a significant influence of the principal's leadership on learning quality.

Teacher Performance (X2)

The level of Learning Quality (Y) can be predicted by Teacher Performance (X2), using the results from SPSS version 27, as presented in the following table:

Table 6. Results of Teacher Performance Variable Analysis

Variable	Unstandardized Coefficient Beta	Standardized Coefficient	t	Sig
Constant	87,145		9,585	,000
Teacher Performance	,374	,396	5,488	,000

Based on the Coefficient table above, the constant value (a) is 87.145, and the teacher performance coefficient (b) is 0.374. Thus, the regression equation can be written as $Y' = a + bX$ or $Y' = 87.145 + 0.374X2$. This regression equation indicates that the regression coefficient (b) of 0.374 means that each one-point increase in teacher performance will increase the learning quality score by 0.374. The constant value of 87.145 suggests an initial positive effect on the dependent variable, namely learning quality.

The analysis results also show that the significance value (sig) is 0.000, which is lower than 0.05. This indicates a significant influence of teacher performance on learning quality.

Facilities and Infrastructures Management

The quality of learning (Y) can be predicted by Facilities and Infrastructure Management (X3), using the results of SPSS version 27, as presented in the following table:

Table 7. Results of the Analysis of the Facilities and Infrastructures Management Variable

Variable	Unstandardized Coefficient Beta	Standardized Coefficient	t	Sig
Constant	68,358		11,003	,000
Facilities and Infrastructures	,577	,657	11,079	,000

The regression analysis shows that facilities and infrastructure management significantly influence learning quality. The regression equation Y^=68.358+0.577XY^= 68.358 + 0.577X indicates that each unit increase in facilities and infrastructure management raises the learning quality score by 0.577. The significance value (0.000) confirms a statistically significant effect.

Multiple Linear Regression Analysis

This analysis aims to identify the simultaneous influence of independent variables on the dependent variable.

Table 8. Results of Multiple Linear Regression Analysis

Model		Unstandardized Coefficient Beta		Standardized Coefficient
		B	Std. Error	Beta
1	(Constant)	64,570	8,452	
	Leadership	,103	,099	,124
	Teacher Performance	,059	,094	,062
	Facility and Infrastructure Management	,528	,079	,601
Dependent Variable: Learning Quality				

Based on the table above, the multiple linear regression equation in this study can be formulated as follows:

$$Y = 64{,}570+0{,}103\ (X_1) + 0{,}059\ (X_2) + 0{,}528\ (X_3) \ldots\ldots\ldots\ldots\ (1)$$

The interpretation of the multiple linear regression equation is as follows:

. The constant value (a) of 64.570 indicates the state when the learning quality variable is not influenced by other independent variables, namely school principal leadership (X,ÇÅ), teacher performance (X,ÇÇ), and facility and infrastructure management (X,ÇÉ).

. The regression coefficient (b,ÇÅ) for the school principal leadership variable is 0.103, meaning that if school principal leadership increases by one unit, learning quality will increase by 0.103, assuming other variables remain constant.

. The regression coefficient (b,ÇÇ) for the teacher performance variable is 0.059, indicating that if teacher performance increases by one unit, learning quality will increase by 0.059, with other variables held constant.

a. The regression coefficient (b,ÇÉ) for the facility and infrastructure management variable is 0.528, meaning that if facility and infrastructure management increases by one unit, learning quality will increase by 0.528, assuming other variables remain unchanged.

Partial Test (T-Test)

The partial test is used to determine the effect of each independent variable on the dependent variable. The decision-making criterion is as follows: if the significance value (sig) is less than 0.05, then Ha is accepted and $H0$ is rejected. However, if the significance value (sig) is greater than 0.05, then $H0$ is accepted and Ha is rejected. The results of the t-test calculation are presented in the following table:

Tabel 9. Results of Partial Test Analysis (T-Test)

Variable		Unstandardized Coefficients	t	Sig
1	Leadership	,103	1,037	,000
2	Teacher Performance	,059	,625	,000
3	Facility and Infrastructure Management	,528	6,709	,000

Based on the calculations presented in Table 9, the interpretation is as follows:

a) The first hypothesis test (H1), which examines the effect of leadership on the quality of learning, shows a significance value of 0.000, which is lower than 0.05. The t-calculated value is 1.037. This indicates that $H0$ is rejected and Ha is accepted, leading to the conclusion that the leadership variable has a positive and significant effect on the quality of learning at vocational high schools (SMKN) in Indragiri Hilir Regency.

b) The second hypothesis test (H2), which assesses the effect of teacher performance on the quality of learning, shows a significance value of 0.000, which is lower than 0.05. The t-calculated value is 0.625. This result

indicates that $H0$ is rejected and Ha is accepted, leading to the conclusion that the teacher performance variable has a positive and significant effect on the quality of learning at vocational high schools (SMKN) in Indragiri Hilir Regency.

c) The third hypothesis test (H3), which examines the effect of facilities and infrastructure management on the quality of learning, shows a significance value of 0.000, which is lower than 0.05. The t-calculated value is 6.709. This indicates that $H0$ is rejected and Ha is accepted, leading to the conclusion that the facilities and infrastructure management variable has a positive and significant effect on the quality of learning at vocational high schools (SMKN) in Indragiri Hilir Regency.

Simultaneous Test (F-Test)

In this study, the calculations were performed using SPSS version 27 and analyzed using the ANOVA table. The results of the simultaneous significance test (F-Test) in this study are presented in the table below:

Table 10. The ANOVA Statistical Test Table

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7006,716	3	2335,572	41,047	,000[b]
	Residual	9104,083	160	56,901		
	Total	16110,799	163			
a. Dependent Variable: Learning Quality b. Predictors: (Constant), Facilities and Infrastructure Management, Teacher Performance, Leadership						

Based on the statistical test table above, the significance value (sig) is 0.000. This follows the decision-making criterion, which states that if the significance value is less than 0.05, then Ha is accepted and $H0$ is rejected. Since the calculated significance value is 0.000 < 0.05, it can be concluded that the hypothesis is accepted. Therefore, leadership, teacher performance, and facilities and infrastructure management collectively have a significant effect on the quality of learning at vocational high schools (SMKN) in Indragiri Hilir Regency.

Coefficient of Determination (R^2)

The coefficient of determination in this study is used to measure the extent to which the independent variables (X) collectively influence the dependent variable (Y) in percentage form. The following are the results of the calculation:

Table 11. Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,985[a]	,971	,970	1,717
a. Predictors: (Constant), Facilities and Infrastructure Management, Leadership, Teacher Performance				

Based on the table above, the R Square value is 0.971. When converted into percentage form, this equates to 97.1%. This indicates that leadership, teacher performance, and facilities and infrastructure management collectively influence the quality of learning by 97.1%. The remaining 2.9% (100% - 97.1%) represents the influence of other variables or factors outside the regression equation used in this study, or variables not included in this research.

DISCUSSION

Based on the research findings, it can be concluded that leadership, teacher performance, and infrastructure management significantly influence the quality of learning at Indragiri Hilir Regency Vocational High School. The first hypothesis testing demonstrates that leadership positively and significantly affects learning quality, aligning with previous studies that emphasize the crucial role of school principals in fostering an environment that enhances educational outcomes. Effective leadership is identified as a key factor in improving the quality of education.

The second hypothesis testing indicates that teacher performance also has a positive and significant impact on learning quality. This finding is consistent with prior research, which highlights that teacher performance plays a vital role in determining learning outcomes. Studies suggest that schools should implement structured monitoring and supervision systems to enhance teacher performance, ultimately contributing to better learning quality.

Furthermore, the third hypothesis testing reveals that infrastructure management significantly influences learning quality. Research findings support the argument that proper management of facilities and infrastructure contributes to improved educational outcomes. Effective management ensures that schools have the necessary resources to support high-quality learning experiences, further reinforcing the importance of well-organized infrastructure administration.

The overall statistical analysis confirms that leadership, teacher performance, and infrastructure management collectively have a significant impact on learning quality. Previous studies also support this conclusion, indicating that the integration of effective leadership, teacher performance monitoring, and proper infrastructure management is crucial for achieving high-quality education. These findings emphasize that improving learning quality requires a holistic approach, where leadership, teacher competence, and

infrastructure management work together to create a supportive educational environment.

CONCLUSIONS AND RECOMMENDATIONS

The study's findings confirm that leadership, teacher performance, and facility and infrastructure management significantly impact learning quality at Indragiri Hilir Regency Vocational High School. The first hypothesis test showed that leadership positively influences learning quality, as indicated by a significance value of 0.000 and a t-value of 1.037. Similarly, the second hypothesis test demonstrated that teacher performance also has a significant positive effect, with a significance value of 0.000 and a t-value of 0.625. The third hypothesis test further revealed that facility and infrastructure management play a crucial role in enhancing learning quality, with a significance value of 0.000 and a t-value of 6.709. Since all significance values were below 0.05, the null hypotheses were rejected, affirming the positive and significant contributions of these factors to learning quality.

Based on these conclusions, several recommendations are proposed to further improve learning quality. School principals should enhance their leadership strategies by strengthening supervision, providing regular training, and fostering a supportive environment for teachers. Teachers, as key contributors to the learning process, should continuously develop their competencies through training and create engaging learning experiences. Additionally, maintaining well-equipped and comfortable facilities is essential for boosting both teacher performance and student learning outcomes. Future research could expand the study sample to a broader area and explore additional factors such as organizational culture, school policies, and climate to gain a more comprehensive understanding of what influences learning quality.

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