

**THE EFFECTS OF PRINCIPAL LEADERSHIP AND
TEACHER COMPETENCE ON THE LEARNING QUALITY:
DOES THE MEDIATION OF INFRASTRUCTURE MATTER ?**

ARTIKEL PENGGANTI SKRIPSI



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**JURUSAN MANAJEMEN PENDIDIKAN ISLAM
FAKULTAS TARBIYAH DAN ILMU KEGURUAN
INSTITUT AGAMA ISLAM NEGERI PONOROGO
2025**

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ARTIKEL

Diajukan untuk memenuhi salah satu persyaratan dalam menyelesaikan Program Sarjana
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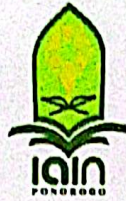


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Ponorogo, 15 April 2025
Yang Membuat Pernyataan



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PERSEMBAHAN

Ucapan syukur Alhamdulillah kepada Allah SWT atas segala petunjuk dan karunianya, sehingga diberikan kelancaran dalam menyelesaikan artikel pengganti skripsi ini dengan judul “Pengaruh Kepemimpinan Kepala Sekolah dan Kompetensi Guru Terhadap Kualitas Pembelajaran Melalui Sarpras Sebagai Variabel Intervening Di SMAN 1 Kawedanan”. Sholawat serta salam semoga tetap terlantunkan kepada Nabi Muhammad SAW. Pada kesempatan kali ini dengan kerendahan hati, skripsi ini saya persembahkan kepada :

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وَأَنْ لَّيْسَ لِلْإِنْسَانِ إِلَّا مَا سَعَىٰ

Artinya : "dan bahwa manusia hanya memperoleh apa yang telah diusahakannya"

(QS. An-Najm Ayat 39)¹

¹ Al-Qur'an, 53: 39.

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Peneliti



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The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?

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ABSTRACT

Objective: Good infrastructure can help teachers in presenting learning materials better. Infrastructure can also assist principals in conducting school administration management more efficiently to focus on developing the quality of learning. This study aims to explore the role of infrastructure as a mediator of the influence of principal leadership and teacher competence on the quality of learning. **Method:** This study used a quantitative survey of randomly selected 42 teachers at SHS 1 Kawedanan Magetan. Data collection was carried out using a questionnaire consisting of a Likert scale with 5 points. PLS-SEM analysis is used to analyze data and test conceptual models. Data analysis techniques include statistical tests to test relationships and mediation. **Results:** The results showed that the quality of learning was directly influenced insignificantly by the principal ($\beta=-0.097$; $\rho=0.522$) and teacher competence. **Novelty:** Infrastructure mediates significantly in improving the quality of learning. Schools and educational institutions must invest time and resources in training and professional development for teachers and principals in leadership, classroom management, and effective teaching methods. The overall quality of learning will improve when the principal can lead the school towards a clear vision of learning, and teachers have adequate skills and knowledge to plan, implement, and evaluate learning effectively.

INTRODUCTION

Quality measures the good and bad of something, quality degrees or levels. Meanwhile, learning is an effort to change student behavior for the better. According to Jiménez-Bucarey et al. (2021), learning quality is a standard process for implementing learning in education to achieve graduate competence. The quality of learning is also referred to as the level of achievement of learning objectives in learning activities (Khakimov & Sharopov, 2023; Mulay & Khanna, 2020). Creating a good quality of learning is not an easy thing to achieve. Many variables influence the quality of learning in these schools, such as the principal leadership model, school culture, and teaching and learning process. Furthermore Safrida et al. (2023) explained that there were also challenges in improving the quality of learning in schools, including because teachers have not fully realized their responsibilities in planning and implementing learning activities that have optimal quality, limited infrastructure, lack of student awareness about the importance of learning optimally, a weak discipline culture, teaching strategies or methods that less varied (Demissie & Egziabher, 2022; Kundu & Bej, 2021; Sutrisno et al., 2023)

Kamrat et al. (2022) mention several components that must be considered to improve the quality of education, including practical and positive leadership, high expectations, monitoring student progress, student responsibility, and participation, intensives, and rewards, parental involvement in school life, planning, and consistent approach. According to Jiménez-Bucarey et al. (2021), Khakimov & Sharopov (2023), and Sutrisno

et al. (2023), schools have seven quality indicators, including curriculum, achievement, learning and teaching, student support, school ethos, resources, and leadership management and quality assurance. According to Mulay and Khanna (2020), several indicators support improving the quality of history learning, including teacher expertise, infrastructure for history learning, academic culture, student perceptions of history learning, and student encouragement.

The importance of principal leadership relates to the principal's need to increase opportunities to hold effective meetings with teachers in a conducive environment (Putra et al., 2022; Safrida et al., 2023). A positive school behavior principal can encourage, direct, and encourage teacher performance by showing friendship, closeness, and consideration towards teachers as a group and individually. Instrumental principal behavior is tasks that are oriented and directly clarified in the roles and responsibilities of teachers, both as a group and individually (Berkovich & Eyal, 2017; Ken et al., 2023). Apart from principal leadership, teacher ability is essential in improving the quality of learning. Competent teachers have the proper knowledge and skills to teach and the ability to manage the classroom well. Competent teachers can motivate students to learn effectively and support their cognitive, social, and emotional development (Kamrat et al., 2022; Matitaputty & Sopacua, 2023).

According to Galdames-Calderón (2023), school principals have many roles in carrying out their responsibilities, one of which is being able to act as an educator for teaching and educational staff. As educators, school principals must continue striving to improve teacher learning quality. In this case, the experience factor will significantly influence the professionalism of school principals, especially in helping to shape the education staff's understanding of what they are learning, according to Li et al. (2023), which states that the commitment of teachers and school principals is the most critical component in efforts to improve teacher competence. This shows that teachers and principals have a relationship that influences each other in the school structure. However, the principal position provides direction and training on teacher abilities and performance (Puruwita et al., 2022; Wahyudi et al., 2023). School principals can provide training to strengthen teachers' potential, role, and function as educators.

Factors that support the principal leadership management in improving the performance of teachers and education are as follows: internal factors include the principal's ability to manage various school plans and patience in dealing with different teachers. External factors include adequate school facilities and parental support. According to Demissie & Egziabher (2022), the most common factors influencing employee performance are competence (ability), leadership, recovery, motivation, education and training, experience, work environment, organizational culture, and job satisfaction. The results show that motivation, leadership, and organizational culture are still highly debated.

A teacher is a person who can build an enjoyable, safe, comfortable, and conducive learning environment. If he is among the students, he can help reduce the atmosphere of harsh learning, rigidity, and boredom (Brink et al., 2023; Hanaysha et al., 2023). Only some people can overcome such conditions, so a teacher must have expertise. The author knows that professional teachers are essential (Antera, 2021; Baumgartner, 2022). They influence the quality of the education process. If they want to become professionals, they must be able to actualize themselves and discover their own identity. Over the past decades, educational development has been given very low

priority, significantly impacting national and international life (Codina & Robinson, 2024).

According to Antera (2021), Codina & Robinson (2024), and Puruwita et al. (2022), several factors cause teachers to only sometimes have competencies that meet standards or are even far from standards. Internal factors include an individual's educational background, teaching experience, work ethic, upgrading, and training. In contrast, external factors come from outside the individual, such as workplace climax, organizational welfare, workplace social environment, infrastructure, etc. As a result of interactions, the quality of teacher competence in carrying out the learning process can be influenced. According to Sutrisno et al. (2023), teachers' lack of professional competence in improving the quality of education still needs to be solved. Various abilities, such as pedagogical abilities, professional abilities, personality abilities, and social abilities, must support teachers. Teachers must inform students and act as managers of learning resources that benefit their students (Ma'arif et al., 2023). Teachers must be able to utilize information and impacts from various branches of science to improve their critical thinking abilities.

This research highlights the critical role of facilities and infrastructure as mediators in the influence of school principal leadership and teacher competence on the quality of learning. The novelty of this research lies in its approach, which integrates three main elements in education, namely leadership, competence, and facilities, in one comprehensive analytical framework. The urgency of this research arises from the urgent need to improve the quality of learning amidst various educational challenges in Indonesia, including limited facilities and the need to improve the quality of human resources. The contribution of this research is very significant because it can provide practical guidance for policymakers and educational implementers in optimizing the use of school facilities and infrastructure to strengthen the positive impact of teacher leadership and competence, thereby creating a more effective and high-quality learning environment in high schools.

LITERATURE REVIEW

The influence of principal leadership on infrastructure and the quality of learning

Studies on the influence of school principals' leadership on infrastructure and the quality of learning show that improving the quality of education is very important. It is recognized that the principal's leadership is a significant component that can determine the course and success of the educational institution. School principals are essential in designing policies, allocating resources, and managing infrastructure through visionary and proactive leadership. Sap is vital because it functions as an infrastructure that supports the learning process. The principal's success in managing infrastructure can create a safe, comfortable, and adequate learning environment. In this context, research can show how principal leadership influences planning, resource allocation, and infrastructure improvement to support learning quality. Such factors greatly influence the quality of learning as a measure of educational success (Galdames-Calderón, 2023; Li et al., 2023).

The influence of teacher competence on structure and the quality of learning

In education, teachers' ability is very important in determining the quality of school learning. High-quality teachers can improve students' academic achievement. However, it is essential to remember that teacher abilities include teaching skills and using and maintaining infrastructure that supports learning (Jiménez-Bucarey et al., 2021; Kamrat

et al., 2022). Studies show that teachers' abilities not only affect their direct interactions with students but also how students use infrastructure in the classroom (Brink et al., 2023; Hanaysha et al., 2023). Teachers' ability affects not only their direct interaction with students but also how they use the classroom's infrastructure.

The influence of infrastructure on the quality of learning

The influence of infrastructure on the quality of education is essential. Good infrastructure in the educational context includes various things, such as safe and comfortable school buildings, complete libraries, sports facilities, computer laboratories, and adequate transportation facilities for students and teachers. Good infrastructure ensures that education is accessible without physical or geographical barriers. Schools that are easy to reach for students and teachers can increase participation and attendance in the learning process. Infrastructure such as computer laboratories, science laboratories, and well-equipped libraries can improve the quality of teaching by providing teachers with the means to deliver material interactively and stimulate students' interest in learning (Haleem et al., 2022; Matitaputty & Sopacua, 2023; Sanusi et al., 2022).

The influence of the mediating role of infrastructure on the influence of the principal leadership and teacher competence on the quality of learning

To improve the education system, research on the role of mediation of infrastructure in the relationship between the leadership of school principals and teacher competence in the quality of learning is very important (Destari et al., 2023; Sutrisno et al., 2023). Infrastructure, which includes physical facilities, technology, and other resources, is essential to the educational environment. All this contributes to the comfort and effectiveness of the learning process (Brink et al., 2023; Hanaysha et al., 2023; Kundu & Bej, 2021). Nonetheless, there are questions about how the role of infrastructure can balance the impact of headmaster leadership on the quality of learning (Khakimov & Sharopov, 2023; Safrida et al., 2023; Yan et al., 2022).

RESEARCH METHOD

Research Design

This type of research uses quantitative analysis with data collection techniques using questionnaires (Apriliani et al., 2023; Putra et al., 2022; Widayanto et al., 2021). This research design uses an explanatory and correlational approach using Partial Least Squares Structural Equation Modeling (PLS-SEM), an approach used to explore the relationship between variables in a conceptual model. PLS-SEM allows researchers to test models holistically, including identifying cause-and-effect relationships and correlation relationships between variables, thereby providing a deeper understanding of the observed phenomena.

Participants and Data Collection

Research design with an explanatory and correlational approach to determine the relationship between independent variables (principal leadership and teacher competency), mediation (infrastructure), and dependent variables (learning quality). The research method used a survey through purposive sampling. The sample for this research was teachers at SHS 1 Kawedanan Magetan, with a total sample of 42 respondents. Data collection was carried out using a survey method via Google Forms.

The measurement uses a 4-point Likert scale from 1 = disagree to 4 = strongly agree (Daryono et al., 2020; Widyastuti et al., 2023). Research instrument variables are shown in Table 1.

Table 1. Research variable construct.

Variables	Indicators	Construct	References
Principal Leadership (X1)	Personality	KKS 1	(Berkovich & Eyal, 2017; Chen, 2024; Galdames-Calderón, 2023; Ken et al., 2023; Kin & Abdull, 2018; Li et al., 2023)
	Knowledge of educational staff	KKS 2	
		KKS 3	
	School vision and mission	KKS 4	
		KKS 5	
	Professional abilities	KKS 6	
		KKS 7	
Teacher Competency (X2)	Pedagogical competence	KMG 1	(Antera, 2021; Baumgartner, 2022; Cañadas, 2023; Gao et al., 2023; Hanaysha et al., 2023; Rahimi & Mosalli, 2024; Wahyuni et al., 2020)
		KMG 2	
		KMG 3	
	Personality competency	KMG 4	
		KMG 5	
		KMG 6	
	Social competence	KMG 7	
		KMG 8	
Learning Quality (Y)	Teacher behavior	KLP 1	(Jiménez-Bucarey et al., 2021; Kamrat et al., 2022; Khakimov & Sharopov, 2023; Matitaputty & Sopacua, 2023; Safrida et al., 2023; Yan et al., 2022)
	Student learning behavior and impact	KLP 2	
	learning climate	KLP 3	
		KLP 4	
	learning materials	KLP 5	
	instructional Media	KLP 6	
	learning system	KLP 7	
Infrastructure (Z)	Number of Classrooms	SPR 1	(Akram & Abdelrady, 2022; Brink et al., 2023; Destari et al., 2023; Haleem et al., 2022; Hanaysha et al., 2023; Sanusi et al., 2022; Sutrisno et al., 2023)
		SPR 2	
		SPR 3	
	Library Availability	SPR 4	
	Laboratory facilities	SPR 5	
		SPR 6	
	Sports facilities	SPR 7	
	Accessibility	SPR 8	
		SPR 9	

Research Hypothesis

Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis:

H-IND_{1&2}: Principal leadership affects improving the quality of learning and infrastructure

H-IND_{2&4}: Teacher competence affects improving the quality of learning and infrastructure

H-IND₅: Infrastructure affects improving the quality of learning

H-IND_{1&2}: Infrastructure mediates the positive influence on the influence of principal leadership and teacher competence on the quality of learning

Data Analysis

Statistical analysis of this research uses the PLS-SEM measurement technique. The outer model testing stage is a measurement model testing stage that aims to prove the validity and estimate the reliability of indicators and constructs. Several requirements that must be met are the indicator loading factor ($\lambda > 0.70$) and the reflective construct AVE (> 0.50) (Daryono et al., 2024; Fauzan et al., 2023; Supriyanto et al., 2022). Reliability estimates use Cronbach Alpha, rho_A, and CR values (> 0.70). The goodness of fit model testing stage aims to test the predictive power and feasibility of the model. The criteria that must be met include predictive relevance to see the model's predictive power on the blindfolding output (Daryono et al., 2023; Hariyanto et al., 2022). The inner model testing stage tests the significance of the direct (H-DIR1-5) and indirect effects (the mediating role of H-IND1-2).

RESULTS AND DISCUSSION

Results

Evaluation of Measurement Models

Evaluation of measurement models is very important to ensure that the indicators used to measure latent constructs or variables are consistent with the research objectives and of good quality. Examining construct validity is the primary goal of measuring model evaluation. Analyzing the relationship between the indicator and the measured construct can ensure that the indicator truly reflects the intended aspect of the construct. By analyzing factor loadings, reliability, and discriminant validity, researchers can decide which indicators should be included in the analysis and which should be omitted.

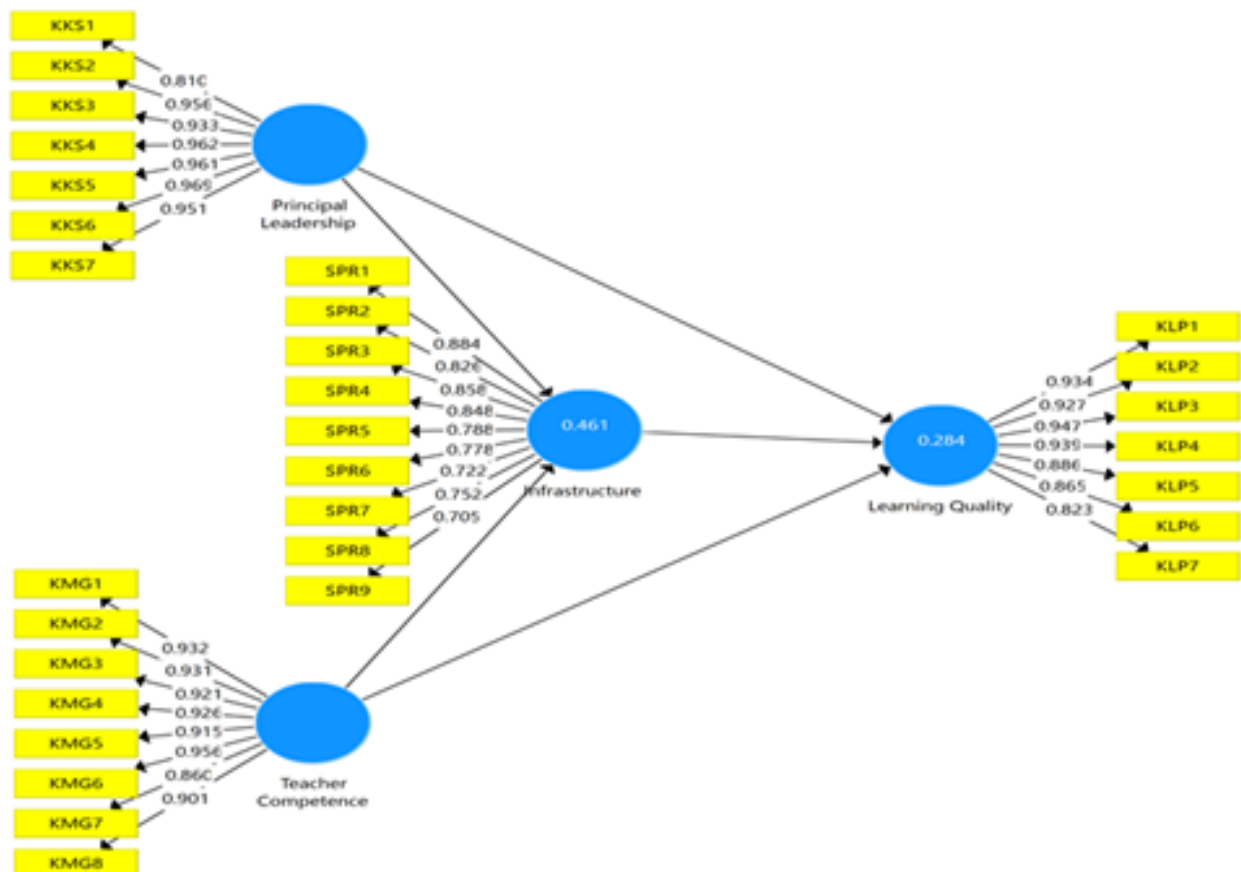


Figure 1. Evaluation of the measurement model.

The convergent validity measurement has a standard loading factor value limit of 0.700. Based on the value of the factor loading coefficient in Table 2, the most dominant question item in measuring the principal leadership variable (X) is the professional ability of 0.969 (PSC 6). At the same time, the weakest item in the variety of infrastructure is the construction of laboratory facilities of 0.722 (SPR7). The Average Extracted Variance (AVE) value of each variable has a value of >0.50, namely the principal leadership (X1) of 0.876, teacher competence (X2) of 0.843, learning quality (Y) of 0.636, and infrastructure 0.817. So, each subvariable and variance in the research model instrument meets the convergent validity requirements. The SmartPLS output in Table 3 shows that all variables have CA values (0.928 to 0.0932), rho_A (0.931 to 0.982), and CR (0.940 to 0.980). So, the instrument's internal consistency in 4 aspects is >0.70.

Table 2. Outer model: Convergent validity.

Variables	Indicators	Conver Validity		Consistency Reliability		
		FL (>0.70)	AVE (>0.50)	CA (α >0.70)	Rho-A (ϕ >0.70)	CR (>0.70)
Principal Leadership(X1)	KKS 1	0.810	0.876	0.976	0.982	0.980
	KKS 2	0.956				
	KKS 3	0.933				
	KKS 4	0.962				
	KKS 5	0.961				
	KKS 6	0.969				
	KKS 7	0.951				
Teacher Competency(X2)	KMG 1	0.932	0.843	0.973	0.976	0.977
	KMG 2	0.931				
	KMG 3	0.921				
	KMG 4	0.926				
	KMG 5	0.915				
	KMG 6	0.956				
	KMG 7	0.860				
	KMG 8	0.901				
Infrastructure(Z)	SPR 1	0.884	0.817	0.928	0.931	0.940
	SPR 2	0.826				
	SPR 3	0.858				
	SPR 4	0.848				
	SPR 5	0.788				
	SPR 6	0.778				
	SPR 7	0.722				
	SPR 8	0.752				
	SPR 9	0.705				
Learning Quality(Y)	KLP 1	0.934	0.636	0.962	0.968	0.969
	KLP 2	0.927				
	KLP 3	0.947				
	KLP 4	0.939				
	KLP 5	0.886				
	KLP 6	0.865				
	KLP 7	0.823				

The Fornell-Larcker test is one of the methods used in Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the discriminant validity of the constructs in a model. This test aims to ensure that the different constructs in the model can be distinguished from each other. This is done by comparing the variance explained by the construct with those explained by other constructs in the model. If the variance explained by one construct is more significant than that explained by another, then the construct has good discriminant validity. When viewed from the correlation value in Table 3, the correlation value of principal leadership (X1) is 0.936, more significant than the correlation value of teacher competence (X2) of 0.918, followed by the quality of learning (Y) of 0.904, and the lowest correlation value of sarpas (0.798), likewise for the assessment of correlation of other variables.

Table 3. Discriminant validity: The fornell larcker.

Variables	X1	X2	Y	Z
X1. Principal Leadership	0.936			
X2. Teacher Competence	0.453	0.918		
Y. Learning Quality	0.214	0.346	0.904	
Z. Infrastructure	0.527	0.620	0.526	0.798

One of the primary purposes of HTMT testing is to measure the validity of discriminants in models. HTMT checks the extent to which constructs measured by different indicators represent the same or different constructs in the model. HTMT is also helpful in assessing multicollinearity between constructs in models. Multicholinerity can occur when constructs are strongly interrelated, leading to problems in estimating and interpreting results in SEM analysis. Meanwhile, the PLS algorithm test results in Table 4 show that the HTMT value in all dimensions is <0.90 (0.213 to 0.644).

Table 4. Discriminant validity: The HTMT.

Variables	X1	X2	Y	Z
X1. Principal Leadership				
X2. Teacher Competence	0.462			
Y. Learning Quality	0.213	0.347		
Z. Infrastructure	0.555	0.644	0.547	

Evaluation of Structural Models

R² (Coefficient of Determination) provides an overview of how well the PLS-SEM model explains variation in the observed endogenous variables (constructs). The higher the R² value, the more significant the proportion of variation in the construct that the model can explain. R² allows comparison between different PLS-SEM models. Researchers can use R² values to compare the effectiveness of different models in explaining variation in observed constructs. Based on Table 5, the R² coefficient on the learning quality variable, a value of 0.284, is obtained; this can be interpreted as the Principal Leadership, teacher competence, and infrastructure affect the learning quality variable by 28.4% and other variables outside the research model influence the remaining 61.6%.

□² helps determine how significant the contribution of latent variables is to the observed construct. □² allows comparison between the contributions of several latent variables to the same construct. So that it can be determined which latent variables have

the most decisive influence on the observed construct. So, the output effect size shows that the most dominant variable in influencing teacher competence is infrastructure ($f^2=0.223$ in the large category, and the weakest variable is teacher competence ($f^2=0.002$) in the small category.

Table 5. Measurement of structural model: R2, f^2 , Q2.

Variable	R2		f2		Q2				Predictive
					Redundancy		Communality		
	Value	Decision	Value	Decision	SSE	Q2 (1-	SSE	Q2 (1-	
						SSE/SSO) >0.35		SSE/SSO) >0.35	
X1. PL			0.009	Small	294		60	0.793	Strong
X2. TC			0.002	Small	336		80	0.760	Strong
Y LC	0.284	Moderate	-		233	0.204	77	0.736	Strong
Z. I	0.461	Moderate	0.223	Large	270	0.284	168	0.554	Strong

The next test, by looking at the value of predictive relevance (Q2), aims to validate the model's predictive capabilities by reality in the field. Based on the Table 5, all Q2 values exceed the intersection point (greater than zero). The calculation of predictive relevance Q2 obtained values of 0.284 to 0.204 in redundancy constructs and 0.554 to 0.793 in cross-validated communality constructs. So, the model measuring the overall quality of learning can explain modern analysis by 28.4% to 79.3% of the phenomenon studied. The results of both procedures show that the quality of learning has strong predictive power.

Measurement of Direct Effects

One of the primary purposes of hypothesis testing is to examine the relationships between variables in the proposed model. This is done by analyzing the strength and significance of the relationships between the variables identified in the model. Direct effect evaluation allows researchers to test the consistency between empirical findings and theories that support the model. In addition, this test analyzes the significance of the mediating effect in the research model. Understanding the mechanisms underlying relationships between variables and how certain variables can mediate or change relationships between other variables is important.

Figure 2 shows H-DIR1 can be accepted with significant criteria if it has a statistical T value above 1.96. At the same time, the hypothesis can be accepted with a positive or negative influence if the acquisition of the value of the B-values coefficient shows the direction of positive or negative influence. Based on Table 6, in the H1 hypothesis, the principal leadership (X1) → the quality of learning (Y) obtained β -values = -0.097 and p-values = 0.522 (0.05). This shows that the Principal Leadership variable (X1) has a negative and insignificant effect on the quality of learning (Y). This can be interpreted as the fact that when the principal leadership variable increases, the variable of learning quality will also increase, but not significantly. In hypothesis H3, the principal leadership (X1) → infrastructure (Z) obtained β - values = 0.310 and p values = 0.015 (0.05). This shows that the principal leadership variable (X1) positively and significantly affects infrastructure (Z). It can be interpreted that when the principal leadership increases, the infrastructure variables will also increase and vice versa.

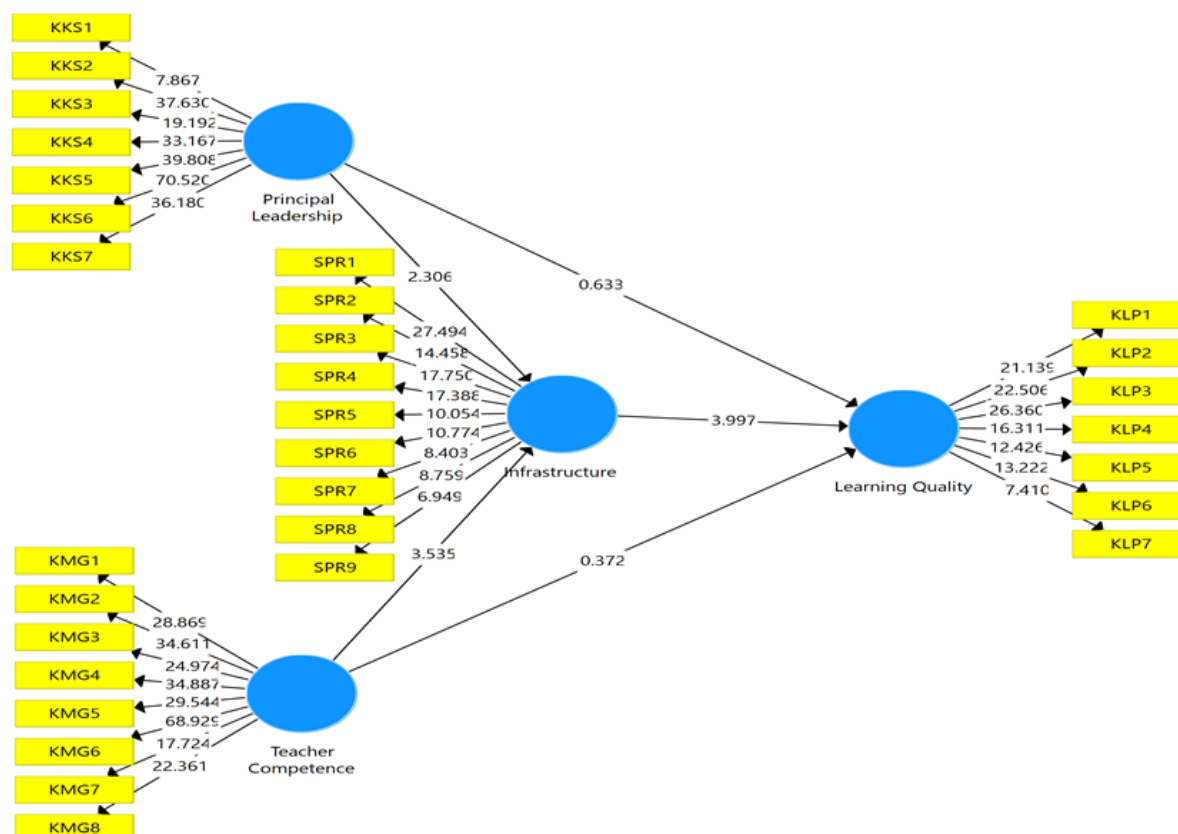


Figure 2. Evaluation of path analysis.

Table 6. Results of path confidence direct effects.

Hyp.	Path Analysis	β -values (+/-)	Sample Mean	SDV	T-statistic (>1.96)	P-values (< 0.05)	Decision
H-DIR1	KKS→KLP	-0.097	-0.091	0.152	0.641	0.522	Rejected
H-DRI2	KMG→KLP	0.053	0.031	0.149	0.355	0.723	Rejected
H-DRI3	KKS→SPR	0.310	0.218	0.127	2.434	0.015	Accepted
H-DRI4	KMG→SPR	0.480	0.483	0.129	3.714	0.000	Accepted
H-DRI5	SPR→KLP	0.544	0.566	0.142	3.824	0.000	Accepted

The mediating role of infrastructure on the influence of the Principal Leadership and teacher competence on the quality of learning

Based on Table 7, in the H-IND1 hypothesis, the results of testing the mediating effect of the variable infrastructure (Z) can be concluded that there is a positive influence (β -values = 0.168) and not significant (T static 1.840 >1.96 and P values 0.066 <0.05) between the Principal Leadership factor (X1) on the quality of learning (Y). So H-IND1 states, "There is a positive and insignificant influence on the role of infrastructure in mediating the principal leadership on the quality of learning." In the H-IND2 hypothesis, the results of testing the mediating effect of the variables of infrastructure (Z) can be concluded that there is a positive (β -values = 0.261) and significant (T statistic 2.521 >1.96 and P values 0.012 <0.05) between teacher competence (X2) on the quality of learning (Y). So H-IND2 states, "There is a positive and significant influence on the role of infrastructure in mediating teacher competence on the quality of learning."

Table 7. Results of path confidence direct effects.

Hyp.	Path Analysis	β - values (+/-)	SDV	T- statistic (>1.96)	P- values (< 0.05)	Decision	Mediating Role
H-IND1	KKS→SPR→KLP	0.168	0.092	1.840	0.066	Rejected	Full Mediation
H-IND2	KMG→SPR→KLP	0.261	0.104	2.521	0.012	Accepted	Full Mediation

Discussion

The results of this study became the highest measuring factor for the principal leadership variable, namely decision-making ability. This means that the principal can analyze the situation well before making decisions that affect the entire school. However, this study needs to be more consistent with Li et al.'s (2023) assessment of the knowledge of education personnel. So, the headmaster still needs to contribute to reforms that improve education. The results of this study also measure the highest factor for the principal's variable, namely the vision and mission of the school. This means that the principal transparently communicates the development and achievement of the school's vision and mission to all relevant parties (Berkovich & Eyal, 2017; Chen, 2024). However, this study needs to be more consistent with Kin & Abdul Kareem's (2018) research related to the principal's personality. The principal still needs to consistently set an example of discipline when carrying out his duties and functions.

This research can provide an in-depth picture of how principals' leadership, infrastructure conditions, and students' learning experiences relate to each other (Destari et al., 2023). The results of this study can be used as a basis for policy-making on more efficient strategies to improve learning quality, including improving infrastructure in various educational institutions. Given the critical importance of principals' leadership on infrastructure and learning quality, this study contributes to the educational literature. It has a practical impact on educational policy-making that can improve the quality of education across schools. Therefore, this study will provide essential knowledge for policymakers, school principals, and education practitioners to help improve the quality of education (Safrida et al., 2023).

The results of this study are the lowest measuring factor for teacher competence variables, namely social competence. This can mean that teachers still often have inclusive attitudes, act objectively, and discriminate against religion, gender, physical condition, race, family background, and social status. However, this study needs to be more consistent with Rahimi and Mosalli's (2024) research on social competence. Where teachers can integrate social-emotional competence into teaching practices and interaction styles with students. The results of this study are the lowest measuring factor for teacher competence variables, namely pedagogic competence; teachers need to understand students' characteristics. However, this study needs to be more consistent with aa20 research on social competence (Antera, 2021; Baumgartner, 2022), where teachers can integrate social-emotional competencies into teaching practices and student interaction styles.

Teacher competence's influence on education quality is very large and has high urgency. Competent teachers have the knowledge and skills necessary to convey lesson material in a way that is easily understood by students (Cañadas, 2023). They can use various teaching methods that suit students' learning styles and facilitate an active and

interactive learning process. High teacher competency directly impacts student academic achievement (Gao et al., 2023; Rahimi & Mosalli, 2024). Teachers who can convey material, provide constructive feedback, and provide individual support to students will help improve their understanding and academic achievement. Competent teachers contribute to increasing the school's reputation in terms of educational quality. Schools that have a quality teaching team tend to attract the interest of students and parents and gain recognition from the community and other educational institutions (Hanaysha et al., 2023; Wahyuni et al., 2020).

The results of this study became the highest measuring factor in the infrastructure variable, namely the number of classrooms. This means that the school has covered the availability of learning facilities such as classrooms, chairs, and LCDs, which are quite adequate. However, this study is consistent with Brink et al. (2023) research related to sports facilities. So schools are recommended to cover the availability of adequate sports facilities. The results of this study became the highest measuring factor in the infrastructure variable, namely the number of classrooms. This means the school has provided adequate computer and internet availability (Destari et al., 2023). However, this study needs to be more consistent with Maryanti and Asjjari's (2022) research on school action. Schools need to recommend student organization spaces that are not strategically located and difficult to access to be strategic and easily accessible.

The results of this research reveal that infrastructure influences the quality of education. A comfortable and safe learning environment can help students and teachers focus on the learning process. A school building that is well-maintained and equipped with adequate facilities can create an atmosphere conducive to learning (Yangambi, 2023). Adequate sports and arts facilities are also important for developing students' potential outside the classroom. Students can develop social skills, leadership, and creativity through extracurricular activities and facilities. Good infrastructure also includes facilities for teacher welfare, such as a comfortable teacher's room and health facilities. Teachers' well-being directly impacts the quality of their teaching and their motivation to develop students (Akram & Abdelrady, 2022).

The results of this study became the highest measuring factor in the variable of learning quality, namely in learning material. This can be interpreted as the teacher's need to ensure that the learning material indicators help determine the level of understanding of student's concepts of the material that has been taught. This study is consistent with Jiménez-Bucarey et al. (2021) research on learning climate. Where teachers can create a good classroom atmosphere to support more focused learning. The results of this study became the lowest measuring factor in the variable of learning quality about learning media. It can be interpreted that teachers do not ensure that learning media include the availability and accessibility of learning media to run effectively. However, this study is inconsistent with Safrida et al. (2023) research on student behavior and impact, where teachers can encourage active participation of students in learning, including involving them in discussions, work groups, and practical activities.

This research is fundamental because it can provide insight into the infrastructure's role as a mediator in optimizing the positive influence of principal leadership and teacher ability on the quality of learning (Chen, 2024; Ken et al., 2023; Li et al., 2023). The results can provide a foundation for better school policy-making, empowering principals to manage infrastructure and developing teachers' abilities to improve the

quality of learning. As a result, the study adds to the missing information and helps improve the education system (Machmud, 2020).

The mediating role of school infrastructure in the influence of school principal leadership on the quality of education is very important. Adequate school infrastructure facilitates the implementation of policies led by school principals. For example, if a school principal has a vision to increase the use of technology in learning, infrastructure such as the availability of computers and fast internet access will enable this vision to be realized more effectively (Akram & Abdelrady, 2022; Haleem et al., 2022; Matitaputty & Sopacua, 2023). Good infrastructure can increase the effectiveness of a school principal's leadership by providing the necessary physical and logistical support. School principals with adequate infrastructure will better manage resources efficiently and effectively to support the learning process.

The mediating role of school infrastructure in the influence of teacher competence on the quality of education is also very important. Good school infrastructure provides physical support to teachers in carrying out their duties. Facilities such as comfortable classrooms, laboratories, libraries, and adequate technological devices will help teachers deliver material effectively and interestingly (Antera, 2021; Brink et al., 2023; Khakimov & Sharopov, 2023; Rahimi & Mosalli, 2024; Yan et al., 2022). Adequate infrastructure provides opportunities for teachers to develop their skills and competencies. For example, complete laboratory or library facilities can be used as learning resources and places to conduct research or experiments, thereby increasing teacher competence in teaching. Comfortable and safe infrastructure can also help maintain teachers' physical and mental well-being. A good work environment will make teachers feel appreciated and motivated to do their best to carry out their duties.

CONCLUSION

Fundamental Finding: Regarding developing high-quality education, research on the mediating role of infrastructure in the reciprocal relationship between teacher ability and learning quality must be addressed. Infrastructure, which includes physical facilities, technology, and other resources in the learning environment, is critical to determining whether teachers support or hinder the teaching process. So far, the education literature has heavily emphasized the relationship between teacher ability and learning quality, emphasizing the positive impact of teacher ability on student achievement. **Implication:** However, how infrastructure functions as a mediator to amplify or dampen the impact of teacher ability on learning quality still needs further attention. Thus, the results of this study can not only provide a solid theoretical foundation but also make a real contribution to education development policies that focus on improving learning quality centered on optimizing infrastructure and improving teacher competence. This research is critical to understanding the complex dynamics between these factors. **Limitation:** Based on the results of the study on the mediating role of infrastructure on the relationship between teacher competence and learning quality, it is recommended that schools and education providers implement strategies that maximize infrastructure and teacher competency development. To create an ideal learning environment, improving the school's technological and physical facilities is first necessary. **Future Research:** Regular maintenance and renewal are required to ensure the positive effects of infrastructure last. Program development and teacher training should also be designed to focus on using technology in the teaching and assessment process. Collaboration between school principals, teaching staff, and

related parties can help implement policies that support infrastructure development and teacher upgrading. Schools can implement these strategies to create innovative and high-quality learning environments that contribute positively to students' academic achievement and overall potential development.

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DAFTAR LAMPIRAN

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LAMPIRAN 1

Surat Izin Penelitian

Surat Permohonan Izin Penelitian dari IAIN Ponorogo



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Nomor : B- 0031 /In.32.2/PP.00.9/02/2024
Lampiran : 1 (Satu) Eksemplar Proposal
Perihal : PERMOHONAN IZIN UNTUK
PENELITIAN INDIVIDUAL

Ponorogo, 02 Januari 2024

Kepada

Yth. Kepala SMAN 1 KAWEDANAN

Di

Tempat

Assalamu'alaikum Wr. Wb.

Dengan hormat kami sampaikan bahwa mahasiswa di bawah ini :

Nama : KAFIFAH DHI MUKAROMAH
NIM : 206210075
Semester : VII (Tujuh) Tahun Akademik : 2023/2024
Fakultas/ Jurusan : Tarbiyah dan Ilmu Keguruan / Manajemen Pendidikan Islam

dalam rangka menyelesaikan studi / penulisan skripsinya yang berjudul :

" PENGARUH KEPEMIMPINAN KEPALA SEKOLAH DAN KOMPETENSI GURU TERHADAP KUALITAS PEMBELAJARAN MELALUI SARPRAS SEBAGAI VARIABEL INTERVENING DI SMAN 1 KAWEDANAN "

Perlu mengadakan penelitian secara individual yang berlokasi di :

SMAN 1 KAWEDANAN

Sehubungan dengan hal tersebut diatas, kami mohon dengan hormat kiranya Bapak/Ibu berkenan memberikan izin dan petunjuk / pengarahan guna kepentingan penelitian dimaksud. Demikian dan atas perkenan Bapak/Ibu kami sampaikan terima kasih.

Wassalamu'alaikum Wr. Wb.

a.n. Dekan,
Wakil Dekan I,



Dr. H. Moh. Miftachul Choiri, M.A.
NIP. 197404181999031002

LAMPIRAN 2

Surat Balasan Izin Penelitian

Surat Balasan Permohonan Izin Penelitian dari SMAN 1 Kawedanan



PEMERINTAH PROVINSI JAWA TIMUR
DINAS PENDIDIKAN
SEKOLAH MENENGAH ATAS NEGERI 1 KAWEDANAN
Jl. Raya Genengan Goronggareng Magetan No. Tlp. (0351) 439255
Email : sman1kawedanan@yahoo.com
website : www.sman1kawedanan.sch.id

Nomor : 000/ 087 /101.6.19.3/ 2024
Lampiran : ---
Perihal : Balasan Permohonan
Ijin Penelitian

Kepada : Yth. Sdr. Dekan
Institut Agama Islam Negeri Ponorogo

Menindaklanjuti surat yang telah Saudara kirim dengan Nomor : B.0021/In.32.2/PP.00.9/01/2024 tanggal 20 Januari 2024, Perihal Permohonan Ijin Untuk Penelitian Individual dari mahasiswa tersebut di bawah ini :

Nama : **KAFIFADHI MUKAROMAH**
NIM : 206210075
Fakultas/Jurusan : Tarbiyah dan Ilmu Keguruan /Manajemen Pendidikan Islam
Tema Tesis : *"Pengaruh Kepemimpinan Kepala Sekolah dan Kompetensi Guru Terhadap Kualitas Pembelajaran Melalui Sarpras Sebagai Variabel Intervening di SMAN 1 Kawedanan."*

Untuk itu, kami sebagai Kepala SMA Negeri 1 Kawedanan Kabupaten Magetan tidak keberatan mahasiswa tersebut melakukan penelitian guna menyelesaikan tugas di instansi yang saya pimpin.

Demikian balasan dari surat yang telah Saudara kirim agar dapat dipergunakan sebagaimana mestinya.

Magetan, 6 Pebruari 2024
Kepala SMAN 1 Kawedanan



ARIS SUDARMONO, M.Pd
NIP. 19691104 199412 1 002

LAMPIRAN 3

Surat Pernyataan Validasi Instrumen

Validasi Dosen – Instrumen Penelitian *The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Dose the Mediation of Infrastructure Matter?*

SURAT PERNYATAAN VALIDASI
INSTRUMEN PENELITIAN TUGAS AKHIR
ARTIKEL JURNAL PENGGANTI SKRIPSI

Saya yang bertanda tangan di bawah ini:

Nama : Rihab Wit D. M.Pd
NIDN : 201406971

Menyatakan bahwa instrumen penelitian Tugas Akhir atas nama mahasiswa.

Nama : Kafifahdhi Mukaromah

NIM : 206210075

Jurusan : Manajemen Pendidikan Islam

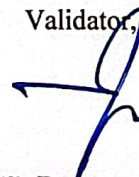
Judul Artikel : The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?

Setelah dilakukan kajian atas instrumen penelitian Tugas Akhir tersebut dapat dinyatakan :

- ☐ Layak digunakan untuk penelitian
- ☒ Layak digunakan dengan perbaikan
- ☐ Tidak layak digunakan untuk penelitian yang bersangkutan dengan surat/perbaikan sebagaimana terlampir.

Ponorogo, 21/12/23

Validator,



Rihab Wit Daryono, M.Pd.
NIDN: 201406971

LAMPIRAN 4

Hasil Validasi Instrumen

Validasi Dosen – Instrumen Penelitian *The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Dose the Mediation of Infrastructure Matter?*

HASIL VALIDASI INSTRUMEN PENELITIAN TUGAS AKHIR ARTIKEL JURNAL PENGGANTI SKRIPSI

Nama Mahasiswa : Kafifahdhi Mukaromah
NIM : 206210075
Judul Artikel : The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?

No	Variabel	Saran/Tanggapan
1.	Principal Leadership	Berikut portofolio materi tersebut benar
2.	Teacher Competence.	bagian matematika dapat saja sub.
3.	Learning Quality.	bagian indikator tersebut dapat saja variabel/ sub variabel
4.	Infrastructure.	Sh!
Komentar Umum/Lainnya: delapan dari penelitian		

Ponorogo, 21/12/23

Validator,


Rihab Wit Daryono, M.Pd.
NIDN: 201406971

LAMPIRAN 5

Hasil Turnitin Plagiarisme Artikel

Hasil Turnitin Plagiarisme artikel *The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Dose the Mediation of Infrastructure Matter?* Dari pihak IJORER



7

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The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?

Kafifahdhi Mukaromah*, Wilis werdiningsih, Rihab Wit Daryono, Muhammad Ghafar
IAIN Ponorogo, Ponorogo Indonesia

Check for updates



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ABSTRACT

Objective: Good infrastructure can help teachers in presenting learning materials better. Infrastructure can also assist principals in conducting school administration management more efficiently to focus on developing the quality of learning. This study aims to explore the role of infrastructure as a mediator of the influence of principal leadership and teacher competence on the quality of learning. **Method:** This study used a quantitative survey of randomly selected 42 teachers at SHS 1 Kawedanan Magetan. Data collection was carried out using a questionnaire consisting of a Likert scale with 5 points. PLS-SEM analysis is used to analyze data and test conceptual models. Data analysis techniques include statistical tests to test relationships and mediation. **Results:** The results showed that the quality of learning was directly influenced insignificantly by the principal ($\beta = -0.097$; $\rho = 0.522$) and teacher competence. **Novelty:** Infrastructure mediates significantly in improving the quality of learning. Schools and educational institutions must invest time and resources in training and professional development for teachers and principals in leadership, classroom management, and effective teaching methods. The overall quality of learning will improve when the principal can lead the school towards a clear vision of learning, and teachers have adequate skills and knowledge to plan, implement, and evaluate learning effectively.

INTRODUCTION

Quality measures the good and bad of something, quality degrees or levels. Meanwhile, learning is an effort to change student behavior for the better. According to Jiménez-Bucarey et al. (2021), learning quality is a standard process for implementing learning in education to achieve graduate competence. The quality of learning is also referred to as the level of achievement of learning objectives in learning activities (Khakimov & Sharopov, 2023; Mulay & Khanna, 2020). Creating a good quality of learning is not an easy thing to achieve. Many variables influence the quality of learning in these schools, such as the principal leadership model, school culture, and teaching and learning process. Furthermore Safrida et al. (2023) explained that there were also challenges in improving the quality of learning in schools, including because teachers have not fully realized their responsibilities in planning and implementing learning activities that have optimal quality, limited infrastructure, lack of student awareness about the importance of learning optimally, a weak discipline culture, teaching strategies or methods that less varied (Demissie & Egziabher, 2022; Kundu & Bej, 2021; Sutrisno et al., 2023)

Kamrat et al. (2022) mention several components that must be considered to improve the quality of education, including practical and positive leadership, high expectations, monitoring student progress, student responsibility, and participation, intensives, and rewards, parental involvement in school life, planning, and consistent approach. According to Jiménez-Bucarey et al. (2021), Khakimov & Sharopov (2023), and Sutrisno

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LAMPIRAN 6

Kisi-Kisi dan Instrumen Penelitian

Kisi-kisi dan Instrumen Penelitian *The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Dose the Mediation of Infrastructure Matter?*

INSTRUMEN PENELITIAN
PENGARUH KEPEMIMPINAN KEPALA SEKOLAH DAN
KOMPETENSI GURU TERHADAP KUALITAS PEMBELAJARAN
MELALUI SARPRAS SEBAGAI VARIABEL INTERVENING DI
SMAN 1 KAWEDANAN

Kepada Yth,

Bapak/ ibu guru

di SMAN 1 KAWEDANAN

Dengan hormat,

Sebelumnya perkenalkan saya Kafifahdhi Mukaromah, mahasiswa Institut Agama Islam Negeri Ponorogo (IAIN), saat ini saya sedang menempuh pendidikan pada program sarjana (S1) prodi Manajemen Pendidikan Islam dan sedang melaksanakan penelitian untuk menyelesaikan tugas penelitian saya yang berjudul: “ **Pengaruh Kepemimpinan Kepala Sekolah dan Kompetensi Guru Terhadap Kualitas Pembelajaran melalui Sarpras sebagai Variabel Intervening di SMAN 1 KAWEDANAN**”.

Penelitian ini bertujuan untuk mendapatkan informasi dan masukan saran dari Bapak/ibu berkaitan dengan pengaruh kepemimpinan kepala sekolah dan kompetensi guru untuk menilai kualitas pembelajaran melalui sarpras di sekolah. Informasi dan masukan serta saran dari Bapak/ibu akan sangat berarti bagi tercapainya maksud dan tujuan penelitian ini.

Atas bantuan dan kerja sama bapak/ibu, saya ucapkan terima kasih.

Hormat saya

Kafifahdhi Mukaromah

Tabel 1. Kisi kisi Instrumen Penelitian

No	Variable	Indikator	Butir	
			(+)	(-)
1.	Kepemimpinan Kepala Sekolah	Kepribadian	1	
		Pengetahuan terhadap tenaga kependidikan	2,3	
		Visi dan misi sekolah	4	5
		Kemampuan mengambil keputusan	6	
		Kemampuan profesional	7,8	9
2.	Kompetensi Guru	Kompetensi pedagogik	1,2	3
		Kompetensi kepribadian	4,5	
		Kompetensi sosial	7,8	
		Kompetensi profesional	10	9
3.	Kualitas Pembelajaran	Perilaku guru	1	2
		Perilaku dan dampak belajar siswa	3	
		Iklim pembelajaran	4,5	
		Materi pembelajaran		6
		Media pembelajaran	7,8	
		Sistem pembelajaran	10	9
4.	Sarana dan Prasarana	Jumlah Ruang Kelas	1,3	2
		Ketersediaan Perpustakaan	4	
		Fasilitas laboratorium	5,6	
		Fasilitas olahraga	7	
		Aksibilitas	8,9	10
		Jumlah		39

INSTRUMEN PENELITIAN

DATA RESPONDEN

Nama Responden :

Jenis Kelamin :

Umur :

Pendidikan Terakhir :

Pengalaman Mengajar :

PETUNJUK PENGISIAN ANGKET :

A. Petunjuk Umum

Instrumen ini bertujuan untuk mengetahui pengaruh kepemimpinan kepala sekolah dan kompetensi guru terhadap kualitas pembelajaran melalui sarpras di SMAN 1 KAWEDANAN. Dimohon untuk mengisi dengan sejujur dan sebenar-benarnya berdasarkan apa yang ada pada diri pribadi Bapak/ibu.

B. Petunjuk Khusus

Mohon Bapak/Ibu memberikan tanggapan Anda pada setiap pertanyaan di bawah ini dengan memberikan tanda checklist (V) di salah satu dari empat jawaban alternatif di kolom penilaian.

Contoh :

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		TP	KK	SR	SS
1.	Kepala sekolah berkontribusi pada pembaruan yang meningkatkan pendidikan.	√			

KUESIONER KEPEMIMPINAN KEPALA SEKOLAH

Petunjuk pengisian:

Di bawah ini terdapat pernyataan kepemimpinan kepala sekolah, guru diharapkan membaca setiap pernyataan dengan teliti, dan kemudian diminta untuk menjawab pernyataan ini sesuai dengan situasi yang sebenarnya dengan memberi tanda √ (centang) pada kolom jawaban yang tersedia.

Tidak ada jawaban yang benar atau salah untuk setiap pernyataan yang diberikan dalam kuesioner ini. Setiap pernyataan memiliki empat opsi untuk merespons, yaitu :

- 4. (SS) = Sangat sering
- 3. (SR) = Sering
- 2. (KK) = Kadang-kadang
- 1. (TP) = Tidak Pernah

Hanya ada satu jawaban pada setiap pernyataan

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	SR	KK	TP
1	Kepala sekolah memberikan teladan tentang disiplin dalam melaksanakan tugas dan fungsinya.				
2	Kepala sekolah memberikan perhatian khusus kepada guru yang memiliki kreativitas tinggi				
3	Kepala sekolah mendorong keterlibatan semua guru dalam setiap kegiatan sekolah				
4	Kepala sekolah secara transparan mengomunikasikan perkembangan dan pencapaian visi dan misi sekolah kepada semua pihak terkait.				
5	Kepala sekolah tidak konsisten mengimplementasikan visi dan misi sekolah dalam kebijakan, program, dan kegiatan sehari-hari.				

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	SR	KK	TP
6	Kepala sekolah mampu menganalisis situasi dengan baik sebelum mengambil keputusan yang berdampak pada seluruh sekolah.				
7	Kepala sekolah mampu mempertimbangkan implikasi jangka panjang dan pendek dari keputusan yang diambil, serta memperhitungkan sumber daya yang tersedia.				
8	Kepala sekolah memiliki kemampuan untuk menyusun program supervisi akademik yang membantu guru dalam merencanakan dan mengelola pembelajaran yang efektif.				
9	Kepala sekolah tidak memiliki kemampuan untuk mempersiapkan pendidik yang profesional di era Society 5.0, dengan mengembangkan literasi data, literasi teknologi, dan literasi manusia.				

KUESIONER KOMPETENSI GURU

Petunjuk pengisian:

Di bawah ini terdapat pernyataan kepemimpinan kepala sekolah, guru diharapkan membaca setiap pernyataan dengan teliti, dan kemudian diminta untuk menjawab pernyataan ini sesuai dengan situasi yang sebenarnya dengan memberi tanda √ (centang) pada kolom jawaban yang tersedia.

Tidak ada jawaban yang benar atau salah untuk setiap pernyataan yang diberikan dalam kuesioner ini. Setiap pernyataan memiliki empat opsi untuk merespons, yaitu :

4. (SS) = Sangat setuju

3. (S) = Setuju

2.(KS) = Kurang setuju

1. (TS) = Tidak setuju

Hanya ada satu jawaban pada setiap pernyataan.

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	S	KS	TS
1	Guru mampu untuk memahami karakteristik peserta didik				
2	Guru mampu melakukan perencanaan pembelajaran yang baik				
3	Guru tidak mampu mengembangkan peserta didik melalui pembelajaran yang efektif				
4	Guru memiliki kepribadian yang dewasa, arif, dan berwibawa, yang dapat mencerminkan integritas dan moralitas yang tinggi				
5	Guru memiliki kemampuan untuk berkomunikasi dengan baik dan efektif kepada semua pihak sekolah.				
6	Guru memiliki sikap inklusif, bertindak obyektif, dan tidak melakukan diskriminasi terhadap agama, jenis kelamin, kondisi fisik,				

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	S	KS	TS
	ras, latar belakang keluarga, dan status sosial.				
7	Guru dapat melakukan adaptasi di tempat bertugas.				
8	Guru mampu mengintegrasikan kompetensi sosial emosional ke dalam praktik mengajar dan gaya interaksi dengan murid.				
9	Guru memiliki pengetahuan mendalam tentang kurikulum sekolah dan standar-standar pendidikan yang berlaku.				
10	Guru mampu memanfaatkan teknologi informasi dan komunikasi (TIK) untuk kepentingan pembelajaran, berkomunikasi, dan mengembangkan diri				

KUESIONER KUALITAS PEMBELAJARAN

Petunjuk pengisian:

Di bawah ini terdapat pernyataan kepemimpinan kepala sekolah, guru diharapkan membaca setiap pernyataan dengan teliti, dan kemudian diminta untuk menjawab pernyataan ini sesuai dengan situasi yang sebenarnya dengan memberi tanda √ (centang) pada kolom jawaban yang tersedia.

Tidak ada jawaban yang benar atau salah untuk setiap pernyataan yang diberikan dalam kuesioner ini. Setiap pernyataan memiliki empat opsi untuk merespons, yaitu :

- 4. (SS) = Sangat sering
- 3. (SR) = Sering
- 2. (KK) = Kadang-kadang
- 1. (TP) = Tidak Pernah

Hanya ada satu jawaban pada setiap pernyataan.

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	SR	KK	TP
1	guru menunjukkan sikap yang profesional dan bertanggung jawab terhadap tugas mengajar, termasuk mempersiapkan materi pembelajaran dengan baik dan tepat.				
2	guru tidak mampu menciptakan lingkungan belajar yang aman, inklusif, dan mendukung partisipasi aktif semua peserta didik.				
3	guru mendorong partisipasi aktif siswa dalam pembelajaran, termasuk melibatkan mereka dalam diskusi, kelompok kerja, dan kegiatan praktik.				
4	guru mampu menciptakan suasana kelas yang baik guna mendukung pembelajaran yang lebih fokus.				
5	guru mampu memberikan Iklim keamanan di				

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	SR	KK	TP
	sekolah yang memberikan perlindungan dan rasa aman bagi seluruh warga sekolah, baik secara fisik dan juga psikologis				
6	guru tidak memastikan Indikator materi pembelajaran membantu dalam menentukan tingkat pemahaman konsep siswa terhadap materi yang telah diajarkan.				
7	guru memastikan media pembelajaran mencakup ketersediaan dan aksesibilitas media pembelajaran.				
8	guru memastikan media pembelajaran mencakup kualitas visual dan audio dari media tersebut.				
9	guru tidak dapat memastikan perencanaan pembelajaran yang terstruktur dan terorganisir.				
10	guru memastikan penggunaan metode dan model pembelajaran yang sesuai dengan materi pembelajaran.				

KUESIONER KUALITAS PEMBELAJARAN

Petunjuk pengisian:

Di bawah ini terdapat pernyataan kepemimpinan kepala sekolah, guru diharapkan membaca setiap pernyataan dengan teliti, dan kemudian diminta untuk menjawab pernyataan ini sesuai dengan situasi yang sebenarnya dengan memberi tanda √ (centang) pada kolom jawaban yang tersedia.

Tidak ada jawaban yang benar atau salah untuk setiap pernyataan yang diberikan dalam kuesioner ini. Setiap pernyataan memiliki empat opsi untuk merespons, yaitu :

4 : Sangat Puas (SP)

3 : Puas (P)

2 : Cukup Puas (CP)

1 : Kurang Puas (KP)

Hanya ada satu jawaban pada setiap pernyataan.

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SP	P	CP	KP
1.	Ketersediaan fasilitas belajar (ruang kelas, kursi, LCD, dsb) yang memadai				
2.	Ketersediaan alat penunjang pembelajaran yang tidak memadai				
3.	Ketersediaan komputer dan internet yang memadai				
4.	Ketersediaan buku referensi perpustakaan				
5.	Ketersediaan laboratorium/ ruang praktik yang memadai				
6.	Kemudahan dalam mendapatkan alat, bahan, serta wahana penunjang untuk kegiatan praktek				
7.	Ketersediaan fasilitas olahraga				
8.	ruang organisasi siswa terletak tidak strategis dan sulit diakses				
9.	Kemudahan dalam menggunakan				

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SP	P	CP	KP
	fasilitas belajar				
10.	Ruang organisasi siswa tersedia dengan kapasitas tidak memadai				

LAMPIRAN 7

Sampel Hasil Responden Angket Instrumen Penelitian

Sampel Jawaban Kisi-kisi dan Instrumen Penelitian *The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Dose the Mediation of Infrastructure Matter?*
Oleh pendidik di SMAN 1 Kawedanan

INSTRUMEN PENELITIAN
PENGARUH KEPEMIMPINAN KEPALA SEKOLAH DAN
KOMPETENSI GURU TERHADAP KUALITAS PEMBELAJARAN
MELALUI SARPRAS SEBAGAI VARIABEL INTERVENING DI
SMAN 1 KAWEDANAN

Kepada Yth,

Bapak/ ibu guru

di SMAN 1 KAWEDANAN

Dengan hormat,

Sebelumnya perkenalkan saya Kafifahdhi Mukaromah, mahasiswa Institut Agama Islam Negeri Ponorogo (IAIN), saat ini saya sedang menempuh pendidikan program sarjana (S1) pada prodi Manajemen Pendidikan Islam dan sedang melaksanakan penelitian untuk menyelesaikan tugas penelitian saya yang berjudul: “ **Pengaruh Kepemimpinan Kepala Sekolah dan Kompetensi Guru Terhadap Kualitas Pembelajaran melalui Sarpras sebagai Variabel Intervening di SMAN 1 KAWEDANAN**”.

Penelitian ini bertujuan untuk mendapatkan informasi dan masukan saran dari Bapak/ibu berkaitan dengan pengaruh kepemimpinan kepala sekolah dan kompetensi guru untuk menilai kualitas pembelajaran melalui sarpras di sekolah. Informasi dan masukan serta saran dari Bapak/ibu akan sangat berarti bagi tercapainya maksud dan tujuan penelitian ini.

Atas bantuan dan kerja sama bapak/ibu, saya ucapkan terima kasih.

Hormat saya

Kafifahdhi Mukaromah

Tabel 1. Kisi kisi Instrumen Penelitian

No	Variable	Indikator	Butir	
			(+)	(-)
1.	Kepemimpinan Kepala Sekolah	Kepribadian	1	
		Pengetahuan terhadap tenaga kependidikan	2,3	
		Visi dan misi sekolah	4	5
		Kemampuan mengambil keputusan	6	
		Kemampuan profesional	7,8	9
2.	Kompetensi Guru	Kompetensi pedagogik	1,2	3
		Kompetensi kepribadian	4,5	
		Kompetensi sosial	7,8	
		Kompetensi profesional	10	9
3.	Kualitas Pembelajaran	Perilaku guru	1	2
		Perilaku dan dampak belajar siswa	3	
		Iklim pembelajaran	4,5	
		Materi pembelajaran		6
		Media pembelajaran	7,8	
		Sistem pembelajaran	10	9
4.	Sarana dan Prasarana	Jumlah Ruang Kelas	1,3	2
		Ketersediaan Perpustakaan	4	
		Fasilitas laboratorium	5,6	
		Fasilitas olahraga	7	
		Aksibilitas	8,9	10
		Jumlah		39

INSTRUMEN PENELITIAN

DATA RESPONDEN

Nama Responden : *Sutono*
Jenis Kelamin : *laki-laki*
Umur : *58 Th*
Pendidikan Terakhir : *Sl.*
Pengalaman Mengajar : *25 Th*

PETUNJUK PENGISIAN ANGKET :

A. Petunjuk Umum

Instrumen ini bertujuan untuk mengetahui pengaruh kepemimpinan kepala sekolah dan kompetensi guru terhadap kualitas pembelajaran melalui sarpras di SMAN 1 KAWEDANAN. Dimohon untuk mengisi dengan sejujur dan sebenar-benarnya berdasarkan apa yang ada pada diri pribadi Bapak/ibu.

B. Petunjuk Khusus

Mohon Bapak/Ibu memberikan tanggapan Anda pada setiap pertanyaan di bawah ini dengan memberikan tanda checklist (V) di salah satu dari empat jawaban alternatif di kolom penilaian.

Contoh :

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		TP	KK	SR	SS
1.	Kepala sekolah berkontribusi pada pembaruan yang meningkatkan pendidikan.	√			

Apabila terdapat keterangan lanjut dari saudara/i bisa mengisi pada kolom "catatan" yang telah disediakan. Dan apabila terdapat faktor pendukung atau

penghambat yang dialami oleh sekolah serta rekomendasi untuk kedepannya.

A. KEPEMIMPINAN KEPALA SEKOLAH (X1)

4. (SS) = Sangat sering

3. (SR) = Sering

2. (KK) = Kadang-kadang

1. (TP) = Tidak Pernah

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	SR	KK	TP
1	Kepala sekolah memberikan teladan tentang disiplin dalam melaksanakan tugas dan fungsinya.	✓			
2	Kepala sekolah memberikan perhatian khusus kepada guru yang memiliki kreativitas tinggi	✓			
3	Kepala sekolah mendorong keterlibatan semua guru dalam setiap kegiatan sekolah		✓		
4	Kepala sekolah secara transparan mengomunikasikan perkembangan dan pencapaian visi dan misi sekolah kepada semua pihak terkait.		✓		
5	Kepala sekolah tidak konsisten mengimplementasikan visi dan misi sekolah dalam kebijakan, program, dan kegiatan sehari-hari.				✓
6	Kepala sekolah mampu menganalisis situasi dengan baik sebelum mengambil keputusan yang berdampak pada seluruh sekolah.		✓		
7	Kepala sekolah mampu mempertimbangkan implikasi jangka panjang dan pendek dari keputusan yang diambil, serta memperhitungkan sumber daya yang tersedia.		✓		
8	Kepala sekolah memiliki kemampuan untuk menyusun program supervisi akademik yang membantu guru dalam merencanakan dan mengelola pembelajaran yang efektif.	✓			
9	Kepala sekolah tidak memiliki kemampuan untuk mempersiapkan pendidik yang profesional di era Society 5.0, dengan mengembangkan literasi data, literasi teknologi, dan literasi manusia.				✓

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja mengenai kepemimpinan kepala sekolah? Mohon masukannya.

☒ Tidak Ada

☐ Ada, yaitu :

B. KOMPETENSI GURU

4. (SS) = Sangat setuju

3. (S) = Setuju

2.(KS) = Kurang setuju

1. (TS) = Tidak setuju

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SS	S	KS	TS	
1	Guru mampu untuk memahami karakteristik peserta didik	✓				4
2	Guru mampu melakukan perencanaan pembelajaran yang baik	✓				4
3	Guru tidak mampu mengembangkan peserta didik melalui pembelajaran yang efektif				✓	4
4	Guru memiliki kepribadian yang dewasa, arif, dan berwibawa, yang dapat mencerminkan integritas dan moralitas yang tinggi	✓				4
5	Guru memiliki kemampuan untuk berkomunikasi dengan baik dan efektif kepada	✓				4

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	S	KS	TS
	semua pihak sekolah.				
6	Guru memiliki sikap inklusif, bertindak obyektif, dan tidak melakukan diskriminasi terhadap agama, jenis kelamin, kondisi fisik, ras, latar belakang keluarga, dan status sosial.		✓		
7	Guru dapat melakukan adaptasi di tempat bertugas.	✓			
8	Guru mampu mengintegrasikan kompetensi sosial emosional ke dalam praktik mengajar dan gaya interaksi dengan murid.		✓		
9	Guru tidak memiliki pengetahuan mendalam tentang kurikulum sekolah dan standar-standar pendidikan yang berlaku.				✓
10	Guru mampu memanfaatkan teknologi informasi dan komunikasi (TIK) untuk kepentingan pembelajaran, berkomunikasi, dan mengembangkan diri	✓			

3
4
3
4
4

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja mengenai peningkatan kompetensi guru? Mohon masukannya.

☒ Tidak Ada

☐ Ada, yaitu :

C. KUALITAS PEMBELAJARAN

4. (SS) = Sangat sering

3. (SR) = Sering

2. (KK) = Kadang-kadang

1. (TP) = Tidak Pernah

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SS	SR	KK	TP	
1	guru menunjukkan sikap yang profesional dan bertanggung jawab terhadap tugas mengajar, termasuk mempersiapkan materi pembelajaran dengan baik dan tepat.	✓				4
2	guru tidak mampu menciptakan lingkungan belajar yang aman, inklusif, dan mendukung partisipasi aktif semua peserta didik.				✓	4
3	guru mendorong partisipasi aktif siswa dalam pembelajaran, termasuk melibatkan mereka dalam diskusi, kelompok kerja, dan kegiatan praktik.	✓				4
4	guru mampu menciptakan suasana kelas yang baik guna mendukung pembelajaran yang lebih fokus.		✓			3
5	guru mampu memberikan iklim keamanan di sekolah yang memberikan perlindungan dan rasa aman bagi seluruh warga sekolah, baik secara fisik dan juga psikologis	✓				4
6	guru tidak memastikan Indikator materi pembelajaran membantu dalam menentukan tingkat pemahaman konsep siswa terhadap materi yang telah diajarkan.				✓	4
7	guru memastikan media pembelajaran mencakup ketersediaan dan aksesibilitas media pembelajaran.		✓			3
8	guru memastikan media pembelajaran mencakup kualitas visual dan audio dari media tersebut.	✓				4
9	guru tidak memastikan perencanaan pembelajaran yang terstruktur dan terorganisir.				✓	4
10	guru memastikan penggunaan metode dan model pembelajaran yang sesuai dengan materi pembelajaran.	✓				4

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja peningkatan kualitas pembelajaran? Mohon masukannya.

☒ Tidak Ada

☐ Ada, yaitu :

D. SARANA DAN PRASARANA

4 : Sangat Puas (SP)

3 : Puas (P)

2 : Cukup Puas (CP)

1 : Kurang Puas (KP)

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SP	P	CP	KP	
1.	Ketersediaan fasilitas belajar (ruang kelas, kursi, LCD, dsb) yang memadai	✓				4
2.	Ketersediaan alat penunjang pembelajaran yang tidak memadai				✓	4
3.	Ketersediaan komputer dan internet yang memadai	✓				4
4.	Ketersediaan buku referensi perpustakaan		✓			3
5.	Ketersediaan laboratorium/ ruang praktik yang memadai		✓			3
6.	Kemudahan dalam mendapatkan alat, bahan, serta wahana penunjang untuk kegiatan praktek		✓			3
7.	Ketersediaan fasilitas olahraga		✓			3

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SP	P	CP	KP	
8.	ruang organisasi siswa terletak strategis dan mudah diakses	✓				4
9.	Kemudahan dalam menggunakan fasilitas belajar	✓				4
10.	Ruang organisasi siswa tersedia dengan Kapasitas yang tidak memadai				✓	4

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja mengenai penggunaan sarana dan prasarana? Mohon masukannya.

☐ Tidak Ada

☐ Ada, yaitu :

INSTRUMEN PENELITIAN

DATA RESPONDEN

Nama Responden : Endang Woro Budizati, S. Pd
Jenis Kelamin : Perempuan
Umur : 47 th
Pendidikan Terakhir : S-1
Pengalaman Mengajar : 24 th

PETUNJUK PENGISIAN ANGKET :

A. Petunjuk Umum

Instrumen ini bertujuan untuk mengetahui pengaruh kepemimpinan kepala sekolah dan kompetensi guru terhadap kualitas pembelajaran melalui sarpras di SMAN 1 KAWEDANAN. Dimohon untuk mengisi dengan sejujur dan sebenar-benarnya berdasarkan apa yang ada pada diri pribadi Bapak/ibu.

B. Petunjuk Khusus

Mohon Bapak/Ibu memberikan tanggapan Anda pada setiap pertanyaan di bawah ini dengan memberikan tanda checklist (V) di salah satu dari empat jawaban alternatif di kolom penilaian.

Contoh :

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		TP	KK	SR	SS
1.	Kepala sekolah berkontribusi pada pembaruan yang meningkatkan pendidikan.	√			

Apabila terdapat keterangan lanjut dari saudara/i bisa mengisi pada kolom "catatan" yang telah disediakan. Dan apabila terdapat faktor pendukung atau

penghambat yang dialami oleh sekolah serta rekomendasi untuk kedepannya.

A. KEPEMIMPINAN KEPALA SEKOLAH (X1)

4. (SS) = Sangat sering
 3. (SR) = Sering
 2. (KK) = Kadang-kadang
 1. (TP) = Tidak Pernah

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SS	SR	KK	TP	
1	Kepala sekolah memberikan teladan tentang disiplin dalam melaksanakan tugas dan fungsinya.	✓				A
2	Kepala sekolah memberikan perhatian khusus kepada guru yang memiliki kreativitas tinggi	✓				A
3	Kepala sekolah mendorong keterlibatan semua guru dalam setiap kegiatan sekolah	✓				A
4	Kepala sekolah secara transparan mengomunikasikan perkembangan dan pencapaian visi dan misi sekolah kepada semua pihak terkait.	✓				A
5	Kepala sekolah tidak konsisten mengimplementasikan visi dan misi sekolah dalam kebijakan, program, dan kegiatan sehari-hari.				✓	A
6	Kepala sekolah mampu menganalisis situasi dengan baik sebelum mengambil keputusan yang berdampak pada seluruh sekolah.	✓				A
7	Kepala sekolah mampu mempertimbangkan implikasi jangka panjang dan pendek dari keputusan yang diambil, serta memperhitungkan sumber daya yang tersedia.	✓				A
8	Kepala sekolah memiliki kemampuan untuk menyusun program supervisi akademik yang membantu guru dalam merencanakan dan mengelola pembelajaran yang efektif.	✓				A
9	Kepala sekolah tidak memiliki kemampuan untuk mempersiapkan pendidik yang profesional di era Society 5.0, dengan mengembangkan literasi data, literasi teknologi, dan literasi manusia.				✓	A.

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja mengenai kepemimpinan kepala sekolah? Mohon masukannya.

☒ Tidak Ada

☐ Ada, yaitu :

B. KOMPETENSI GURU

4. (SS) = Sangat setuju

3. (S) = Setuju

2.(KS) = Kurang setuju

1. (TS) = Tidak setuju

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SS	S	KS	TS	
1	Guru mampu untuk memahami karakteristik peserta didik	✓				4
2	Guru mampu melakukan perencanaan pembelajaran yang baik	✓				4
3	Guru tidak mampu mengembangkan peserta didik melalui pembelajaran yang efektif				✓	1.
4	Guru memiliki kepribadian yang dewasa, arif, dan berwibawa, yang dapat mencerminkan integritas dan moralitas yang tinggi	✓				4
5	Guru memiliki kemampuan untuk berkomunikasi dengan baik dan efektif kepada	✓				4.

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SS	S	KS	TS
	semua pihak sekolah.				
6	Guru memiliki sikap inklusif, bertindak obyektif, dan tidak melakukan diskriminasi terhadap agama, jenis kelamin, kondisi fisik, ras, latar belakang keluarga, dan status sosial.	✓			
7	Guru dapat melakukan adaptasi di tempat bertugas.	✓			
8	Guru mampu mengintegrasikan kompetensi sosial emosional ke dalam praktik mengajar dan gaya interaksi dengan murid.	✓			
9	Guru tidak memiliki pengetahuan mendalam tentang kurikulum sekolah dan standar-standar pendidikan yang berlaku.				✓
10	Guru mampu memanfaatkan teknologi informasi dan komunikasi (TIK) untuk kepentingan pembelajaran, berkomunikasi, dan mengembangkan diri	✓			

4

4

4

4

4

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja mengenai peningkatan kompetensi guru? Mohon masukannya.

☒ Tidak Ada

☐ Ada, yaitu :

C. KUALITAS PEMBELAJARAN

4. (SS) = Sangat sering

3. (SR) = Sering

2. (KK) = Kadang-kadang

1. (TP) = Tidak Pernah

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SS	SR	KK	TP	
1	guru menunjukkan sikap yang profesional dan bertanggung jawab terhadap tugas mengajar, termasuk mempersiapkan materi pembelajaran dengan baik dan tepat.	✓				4
2	guru tidak mampu menciptakan lingkungan belajar yang aman, inklusif, dan mendukung partisipasi aktif semua peserta didik.				✓	4.
3	guru mendorong partisipasi aktif siswa dalam pembelajaran, termasuk melibatkan mereka dalam diskusi, kelompok kerja, dan kegiatan praktik.	✓				4
4	guru mampu menciptakan suasana kelas yang baik guna mendukung pembelajaran yang lebih fokus.	✓				4
5	guru mampu memberikan Iklim keamanan di sekolah yang memberikan perlindungan dan rasa aman bagi seluruh warga sekolah, baik secara fisik dan juga psikologis	✓				4.
6	guru tidak memastikan Indikator materi pembelajaran membantu dalam menentukan tingkat pemahaman konsep siswa terhadap materi yang telah diajarkan.				✓	4.
7	guru memastikan media pembelajaran mencakup ketersediaan dan aksesibilitas media pembelajaran.	✓				4
8	guru memastikan media pembelajaran mencakup kualitas visual dan audio dari media tersebut.	✓				4.
9	guru tidak memastikan perencanaan pembelajaran yang terstruktur dan terorganisir.				✓	4
10	guru memastikan penggunaan metode dan model pembelajaran yang sesuai dengan materi pembelajaran.	✓				4.

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja peningkatan kualitas pembelajaran? Mohon masukannya.

☒ Tidak Ada

☐ Ada, yaitu :

D. SARANA DAN PRASARANA

4 : Sangat Puas (SP)

3 : Puas (P)

2 : Cukup Puas (CP)

1 : Kurang Puas (KP)

NO	PERNYATAAN	ALTERNATIF JAWABAN				
		SP	P	CP	KP	
1.	Ketersediaan fasilitas belajar (ruang kelas, kursi, LCD, dsb) yang memadai		✓			3
2.	Ketersediaan alat penunjang pembelajaran yang tidak memadai		✓		✓	4.
3.	Ketersediaan komputer dan internet yang memadai		✓			3
4.	Ketersediaan buku referensi perpustakaan	✓				4
5.	Ketersediaan laboratorium/ ruang praktik yang memadai	✓				4
6.	Kemudahan dalam mendapatkan alat, bahan, serta wahana penunjang untuk kegiatan praktek	✓				4
7.	Ketersediaan fasilitas olahraga	✓				4,

NO	PERNYATAAN	ALTERNATIF JAWABAN			
		SP	P	CP	KP
8.	ruang organisasi siswa terletak strategis dan mudah diakses	✓			
9.	Kemudahan dalam menggunakan fasilitas belajar	✓			
10.	Ruang organisasi siswa tersedia dengan Kapasitas yang tidak memadai	✓			

1
1
1

Apakah dari uraian diatas terdapat faktor pendukung dan penghambat yang dialami oleh Bapak/Ibu di tempat Bapak/Ibu bekerja mengenai penggunaan sarana dan prasarana? Mohon masukannya.

☒ Tidak Ada

☐ Ada, yaitu :

LAMPIRAN 8

Data Sampel Responden Angket Instrumen Penelitian Keseluruhan

Pengisian Keseluruhan Data Responden Kisi-kisi dan Instrumen Penelitian Oleh pendidik di
SMAN 1 Kawedanan

Guru SMAN 1 Kawedanan

[illegible]

LAMPIRAN 9

Bukti Submit (Submission Acknowledgement)

Bukti Submit di Jurnal IJORE: International Journal of Recent Educational Research

Submissions

The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?

Kafifahdhi Mukaromah, Wilis Werdiningsih, Rih...

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1 pesan

Assoc. Prof. Dr. Binar Kurnia Prahani <ijorer@ia-education.com>
Kepada: Kafifahdhi Mukaromah <kafifahdhim622@gmail.com>

Jum, 14 Jun 2024 pukul 18.09

Kafifahdhi Mukaromah:

Terima kasih telah mengirimkan naskah, "Dampak Kepemimpinan Kepala Sekolah dan Kompetensi Guru terhadap Kualitas Pembelajaran: Apakah Mediasi Infrastruktur Penting?" ke IJORER: Jurnal Internasional Penelitian Pendidikan Terkini. Dengan sistem manajemen jurnal daring yang kami gunakan, Anda akan dapat melacak kemajuannya melalui proses penyuntingan dengan masuk ke situs web jurnal:

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The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?



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ABSTRACT

Objective: Good infrastructure can help teachers in presenting learning materials better. Infrastructure can also assist principals in conducting school administration management more efficiently, so that they can focus on developing the quality of learning. This study aims to explore the role of infrastructure as a mediator of the influence of principal leadership and teacher competence on the quality of learning. **Method:** This study used a quantitative survey method to 42 teachers at SMAN 1 Kawedanan Magetan who were selected by random sampling. Data collection was carried out using a questionnaire consisting of a Likert scale with 5 points. PLS-SEM analysis is used to analyze data and test conceptual models. Data analysis techniques include statistical tests to test relationships and mediation. **Results:** The results showed that the quality of learning was directly influenced insignificantly by the principal ($\beta = -0.097$; $p = 0.522$) and teacher competence. **Novelty:** But infrastructure mediates significantly in improving the quality of learning. Schools and educational institutions need to invest time and resources in training and professional development for teachers and principals such as leadership, classroom management, and effective teaching methods. The overall quality of learning will improve when the principal is able to lead the school towards a clear vision of learning and teachers have adequate skills and knowledge to effectively plan, implement and evaluate learning.

INTRODUCTION

Quality is a measure of the good and bad of something, levels, quality degrees or levels. Meanwhile, learning is an effort to change student behavior for the better. According to Jiménez-Bucarey et al. (2021) learning quality is a standard process related to the implementation of learning in an education to achieve graduate competence. The quality of learning is also referred to as the level of achievement of learning objectives in learning activities (Chandra et al., 2019; Khakimov & Sharopov, 2023; Mulay & Khanna, 2020). Creating a good quality of learning is not an easy thing to achieve. Because, many variables are influential in determining the quality of learning in these schools, such as the principal leadership model, school culture, and teaching and learning process. Furthermore Safrida et al. (2023) explained that there were also challenges in improving the quality of learning in schools, including because teachers have not fully realized their responsibilities in planning and implementing learning activities that have optimal quality, limited infrastructure, lack of student awareness about the importance of learning optimally, a weak discipline culture, teaching strategies or methods that less varied (Demissie & Egziabher, 2022; Fanggidae, 2018; Kundu & Bej, 2021; Sutrisno et al., 2023)

According to Kamrat et al. (2022) mentions several components that must be considered to improve the quality of education including effective and positive leadership, high expectations, monitoring student progress, student responsibility and their participation, intensives and rewards, parental involvement in school life, planning and consistent approach. According to Jiménez-Bucarey et al. (2021), Khakimov & Sharopov (2023), and Sutrisno et al. (2023) schools have seven quality indicators

including curriculum, achievement, learning and teaching, student support, school ethos, resources, and leadership management and quality assurance. According to Mulay & Khanna (2020) there are several indicators that support improving the quality of history learning, including teacher expertise, infrastructure for history learning, academic culture, student perceptions of history learning, and student encouragement.

The importance of principal leadership relates to the principal's need to increase opportunities to hold effective meetings with teachers in a conducive environment (Putra et al., 2022; Safrida et al., 2023). A positive school behavior principal can encourage, direct and encourage teacher performance by showing a feeling of friendship, closeness and consideration towards teachers, both as a group and individually. Instrumental principal behavior is tasks that are oriented and directly clarified in the roles and responsibilities of teachers, both as a group and individually (Berkovich & Eyal, 2017; Ken et al., 2023). Apart from the principal leadership, teacher ability is very important to improve the quality of learning. Competent teachers have the right knowledge and skills to teach as well as the ability to manage the classroom well. Competent teachers can also motivate students to learn in an effective way and support their cognitive, social and emotional development (Kamrat et al., 2022; Matitaputty & Sopacua, 2023).

According to Galdames-Calderón (2023) that school principals have many roles in carrying out their responsibilities, one of which is being able to act as an educator for teaching and educational staff. As educators, school principals must continue to strive to improve the quality of teacher learning. In this case, the experience factor will greatly influence the professionalism of school principals, especially in helping to shape the education staff's understanding of what they are learning. According to Li et al. (2023) which states that the commitment of teachers and school principals is the most important component in efforts to improve teacher competence. This shows that teachers and principals have a relationship that influences each other in the school structure. However, the position of principal tends to provide direction and training on teacher abilities and performance (Puruwita et al., 2022; Wahyudi et al., 2023). One of the training that can be provided by school principals is to strengthen the potential, role and function of teachers as educators.

According to Berkovich & Eyal (2017) the factors that support the principal leadership management in improving the performance of teachers and education are as follows: internal factors include the principal's ability to manage various school plans and patience in dealing with different teachers. External factors include adequate school facilities and parental support. According to Demissie & Egziabher (2022) that the most common factors that influence employee performance are competence (ability), leadership, recovery, motivation, education and training, experience, work environment, organizational culture, and job satisfaction. The results show that the variables of motivation, leadership, and organizational culture are still highly debated.

A teacher is a person who can build an interesting, safe, comfortable and conducive learning environment (Brink et al., 2023; Hanaysha et al., 2023). If he is among the students, he can help reduce the atmosphere of harsh learning, rigidity, and boredom. Not everyone is able to overcome such conditions, so a teacher must have expertise. The author is aware that the existence of professional teachers is very important (Antera, 2021; Baumgartner, 2022). A quality education process is influenced by professional teachers. They must have the ability to actualize themselves and discover their own



identity if they want to become professionals. Over the past decades, educational development has been given very low priority, which has had a significant negative impact on national and international life (Codina & Robinson, 2024).

According to Antera (2021), Codina & Robinson (2024), and Puruwita et al. (2022) there are several factors that cause teachers to not always have competencies that meet standards or are even far from standards. Internal factors consist of an individual's educational background, teaching experience, work ethic, upgrading and training, while external factors come from outside the individual such as workplace climax, organizational welfare, workplace social environment, infrastructure, etc. As a result of interactions with each other, the quality of teacher competence in carrying out the learning process can be influenced. According to Sutrisno et al. (2023) in efforts to improve the quality of education, the lack of professional competence of teachers is clearly still a problem. Teachers must be supported by various abilities, such as pedagogical abilities, professional abilities, personality abilities, and social abilities. Teachers must not only inform students, but must also act as managers of learning resources that benefit their students (Ma`arif et al., 2023). Teachers must have the ability to utilize information and impacts from various branches of science to improve their critical thinking abilities.

Management of educational infrastructure can also be defined as a cooperative process of utilizing educational infrastructure effectively and efficiently (Destari et al., 2023; Kundu & Bej, 2021). Management of educational infrastructure includes the management of all tools, materials and other facilities used in learning activities so that the teaching and learning process can run well (Akram & Abdelrady, 2022; Brink et al., 2023; Destari et al., 2023; Sanusi et al., 2022). According to this definition, existing infrastructure in higher education institutions must be utilized and managed for the benefit of the learning process. This management is intended to ensure that the use of infrastructure runs effectively and efficiently. In higher education institutions, management of infrastructure is very important because it will really help the learning process.

LITERATURE REVIEW

The influence of principal leadership on infrastructure and the quality of learning

Studies on the influence of school principals' leadership on infrastructure and the quality of learning show that improving the quality of education is very important. It is recognized that the leadership of the principal is a major component that has the ability to determine the course and success of the educational institution (Berkovich & Eyal, 2017; Kin & Abdull Kareem, 2018). School principals have an important role in designing policies, allocating resources, and managing infrastructure well through visionary and proactive leadership. Because it functions as an infrastructure that supports the learning process, sap is very important. The success of the principal in managing infrastructure can create a safe, comfortable, and adequate learning environment. In this context, research can show how headmaster leadership influences planning, resource allocation, and improvement of infrastructure as a support for learning quality. Such factors greatly influence the quality of learning, as a measure of

educational success (Galdames-Calderón, 2023; Li et al., 2023). Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis:

H-IND1&2: principal leadership has an effect on improving the quality of learning and infrastructure

The influence of teacher competence on in frastructure and the quality of learning

In education, the ability of teachers is very important to determine the quality of learning in schools. According to (Jiménez-Bucarey et al., 2021; Kamrat et al., 2022) high-quality teachers can improve students' academic achievement. However, it is important to remember that teacher abilities include not only teaching skills, but also the ability to use and maintain infrastructure that support learning. Studies show that teachers' abilities not only affect their direct interactions with students, but also how students use infrastructure in the classroom (Brink et al., 2023; Hanaysha et al., 2023). The ability of teachers not only affects their direct interaction with students, but also how students use infrastructure in the classroom. Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis:

H-IND2&4 : teacher competence has an effect on improving the quality of learning and infrastructure

The influence of infrastructure on the quality of learning

The influence of infrastructure on the quality of education is important. Good infrastructure in the educational context includes various things, such as safe and comfortable school buildings, complete libraries, sports facilities, computer laboratories, and adequate transportation facilities for students and teachers. Good infrastructure ensures that education is accessible to everyone without physical or geographical barriers. Schools that are easy to reach for students and teachers can increase participation and attendance in the learning process. Infrastructure such as computer laboratories, science laboratories, and well-equipped libraries can improve the quality of teaching by providing teachers with the means to deliver material interactively and stimulate students' interest in learning (Haleem et al., 2022; Matitaputty & Sopacua, 2023; Sanusi et al., 2022). Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis:

H-IND5 : infrastructure have an effect on improving the quality of learning

The influence of the mediating role of infrastructure on the influence of the principal leadership and teacher competence on the quality of learning

To improve the education system, research on the role of mediation of infrastructure in the relationship between the leadership of school principals and teacher competence on the quality of learning is very important (Destari et al., 2023; Sutrisno et al., 2023). Infrastructure, which include physical facilities, technology, and other resources, are essential to the educational environment. All this contributes to the comfort and effectiveness of the learning process (Brink et al., 2023; Hanaysha et al., 2023; Kundu & Bej, 2021). Many studies acknowledge the importance of headmaster leadership as an agent of change in the management of infrastructure . A good headmaster can direct and encourage school resources with strategies, including ensuring infrastructure is available. Nonetheless, there are questions about how the role of infrastructure can



balance the impact of headmaster leadership on the quality of learning (Khakimov & Sharopov, 2023; Safrida et al., 2023; Yan et al., 2022). Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis: **H-IND1&2:** infrastructure mediate the positive influence on the influence of principal leadership and teacher competence on the quality of learning

RESEARCH METHOD

This type of research uses quantitative analysis with data collection techniques using questionnaires (Apriliani et al., 2023; Putra et al., 2022; Widayanto et al., 2021). This research design uses an explanatory and correlational approach using Partial Least Squares Structural Equation Modeling (PLS-SEM) which is an approach used to explore the relationship between variables in a conceptual model. PLS-SEM is a multivariate statistical method used to analyze the relationship between latent or measured variables in a structural model. By using this approach, this research combines explanatory and correlational elements to better understand the complexity of the relationships between variables in a conceptual model. PLS-SEM allows researchers to test models holistically, including identifying cause-and-effect relationships and correlation relationships between variables, thereby providing a deeper understanding of the observed phenomena.

Research design with an explanatory and correlational approach to determine the relationship between independent variables (principal leadership and teacher competency), mediation (infrastructure), and dependent variables (learning quality). The research method used a survey through purposive sampling. The sample for this research was teachers at SMAN 1 Kawedanan magetan with a total sample of 42 respondents. Data collection was carried out using a survey method via Google Forms. The measurement uses a 4-point Likert scale measurement, namely from 1 = disagree, to 4 = strongly agree (Daryono et al., 2020; Widyastuti et al., 2023). Research instrument variables are shown in Table 1.

Table 1. Research Variable Construct

Variables	Indicators	Construct	References
Principal Leadership (X1)	Personality	KKS 1	(Berkovich & Eyal, 2017; Chen, 2024; Galdames-Calderón, 2023; Ken et al., 2023; Kin & Abdull Kareem, 2018; Li et al., 2023)
	Knowledge of educational staff	KKS 2	
		KKS 3	
	School vision and mission	KKS 4	
		KKS 5	
	Professional abilities	KKS 6	
		KKS 7	
Teacher Competency (X2)	Pedagogical competence	KMG 1	(Antera, 2021; Baumgartner, 2022; Cañadas, 2023; Gao et al., 2023; Hanaysha et al., 2023; Rahimi & Mosalli, 2024; Wahyuni et al., 2020)
		KMG 2	
		KMG 3	
	Personality competency	KMG 4	
		KMG 5	
		KMG 6	
	Social competence	KMG 7	

Variables	Indicators	Construct	References
		KMG 8	
Learning Quality (Y)	Teacher behavior	KLP 1	(Jiménez-Bucarey et al., 2021; Kamrat et al., 2022; Khakimov & Sharopov, 2023; Matitaputty & Sopacua, 2023; Safrida et al., 2023; Yan et al., 2022)
	Student learning behavior and impact	KLP 2	
	learning climate	KLP 3	
	learning materials	KLP 4	
	instructional Media	KLP 5	
	learning system	KLP 6	
		KLP 7	
Infrastructure (Z)	Number of Classrooms	SPR 1	(Akram & Abdelrady, 2022; Brink et al., 2023; Destari et al., 2023; Haleem et al., 2022; Hanaysha et al., 2023; Sanusi et al., 2022; Sutrisno et al., 2023)
		SPR 2	
		SPR 3	
	Library Availability	SPR 4	
	Laboratory facilities	SPR 5	
		SPR 6	
	Sports facilities	SPR 7	
	Accessibility	SPR 8	
		SPR 9	

Statistical analysis of this research uses the PLS-SEM measurement technique. The outer model testing stage is a measurement model testing stage that aims to prove the validity and estimate the reliability of indicators and constructs. Several requirements that must be met are the indicator loading factor ($\lambda > 0.70$), and the reflective construct AVE (> 0.50) (Daryono et al., 2024; Fauzan et al., 2023; Supriyanto et al., 2022). Reliability estimates use Cronbach Alpha, rho_A, and CR values (> 0.70). The goodness of fit model testing stage aims to test the predictive power of the model and the feasibility of the model. The criteria that must be met include predictive relevance to see the predictive power of the model on the blindfolding output (Daryono et al., 2023; Hariyanto et al., 2022). The inner model testing stage is to test the significance of the direct (H-DIR1-5) and indirect effects (the mediating role of H-IND1-2).

RESULTS AND DISCUSSION

Results

Evaluation of Measurement Models

Evaluation of measurement models is very important to ensure that the indicators used to measure latent constructs or variables are by the research objectives and have good quality. Examining construct validity is the primary goal of measuring model evaluation. Analysing the relationship between the indicator and the measured construct can ensure that the indicator truly reflects the intended aspect of the construct. By analyzing factor loadings, reliability, and discriminant validity, researchers can decide which indicators should be included in the analysis and which should be omitted.

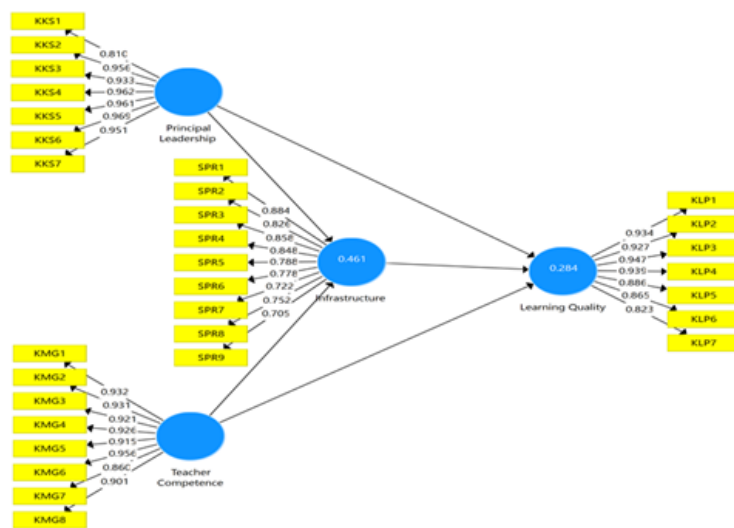


Figure 1. Evaluation of the Measurement Model

The convergent validity measurement has a standard loading factor value limit of 0.7. Based on the value of the factor loading coefficient in Table 2, the most dominant question item in measuring the principal leadership variable (X) is professional ability of 0.969 (PSC 6). While the weakest item in the variety of infrastructure is the construction of laboratory facilities of 0.722 (SPR7). The Average Extracted Variance (AVE) value of each variable has a value of >0.50 , namely the principal leadership (X1) of 0.876; teacher competence (X2) of 0.843; learning quality (Y) of 0.636; and infrastructure 0.817. So it can be concluded that each subvariable and variance in the instrument in the research model has met the requirements of convergent validity. The SmartPLS output in Table 3 below shows that all variables have CA values (0.928 to 0.932), rho_A (0.931 to 0.982), and CR (0.940 to 0.980). So it can be concluded that the internal consistency of the instrument in 4 aspects has a value of >0.70 .

Table 2. Outer Model: Convergent Validity

Variables	Indicators	Convergent Validity		Consistency Reliability		
		FL (>0.70)	AVE (>0.50)	CA ($\alpha > 0.70$)	Rho-A ($\rho > 0.70$)	CR (>0.70)
Principal Leadership(X1)	KKS 1	0.810	0.876	0.976	0.982	0.980
	KKS 2	0.956				
	KKS 3	0.933				
	KKS 4	0.962				
	KKS 5	0.961				
	KKS 6	0.969				
	KKS 7	0.951				
Teacher	KMG 1	0.932	0.843	0.973	0.976	0.977

Variables	Indicators	Conver Validity		Consistency Reliability		
		FL (>0.70)	AVE (>0.50)	CA (α >0.70)	Rho-A (ρ >0.70)	CR (>0.70)
Competency(X2)	KMG 2	0.931				
	KMG 3	0.921				
	KMG 4	0.926				
	KMG 5	0.915				
	KMG 6	0.956				
	KMG 7	0.860				
	KMG 8	0.901				
Infrastructure(Z)	SPR 1	0.884	0.817	0.928	0.931	0.940
	SPR 2	0.826				
	SPR 3	0.858				
	SPR 4	0.848				
	SPR 5	0.788				
	SPR 6	0.778				
	SPR 7	0.722				
	SPR 8	0.752				
	SPR 9	0.705				
Learning Quality(Y)	KLP 1	0.934	0.636	0.962	0.968	0.969
	KLP 2	0.927				
	KLP 3	0.947				
	KLP 4	0.939				
	KLP 5	0.886				
	KLP 6	0.865				
	KLP 7	0.823				

The Fornell-Larcker test is one of the methods used in Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the discriminant validity of the constructs in a model. This test aims to ensure that the different constructs in the model can be distinguished from each other. This is done by comparing the variance explained by the construct with the variance explained by other constructs in the model. If the variance explained by a construct is greater than the variance explained by another construct, then the construct has good discriminant validity. When viewed from the correlation value in Table 3, the correlation value of principal leadership (X1) is 0.936, greater than the correlation value of teacher competence (X2) of 0.918, followed by the quality of learning (Y) of 0.904, and the lowest correlation value of sarpas (0.798). Likewise for the assessment of correlation of other variables.

Table 3. Discriminant Validity: The Fornell Larcker

Variables	X1	X2	Y	Z
X1. Principal Leadership	0.936			
X2. Teacher Competence	0.453	0.918		
Y. Learning Quality	0.214	0.346	0.904	
Z. Infrastructure	0.527	0.620	0.526	0.798

One of the main purposes of HTMT testing is to measure the validity of discriminants in models. HTMT is used to check the extent to which constructs measured by different indicators represent the same or different constructs in the



model. HTMT is also useful for assessing multicholinerity between constructs in models. Multicholinerity can occur when constructs are strongly interrelated, which can lead to problems in the estimation and interpretation of results in SEM analysis. Meanwhile, the PLS algorithm test results in Table 4 show that the HTMT value in all dimensions is <0.90 (0.213 to 0.644).

Table 4. Discriminant Validity: The HTMT

Variables	X1	X2	Y	Z
X1. Principal Leadership				
X2. Teacher Competence	0.462			
Y. Learning Quality	0.213	0.347		
Z. Infrastructure	0.555	0.644	0.547	

Evaluation of Structural Models

Structural evaluation in testing on PLS-SEM has the main objective of assessing the accuracy of the predictions of the proposed model. This is done by evaluating the extent to which the model is able to explain variations in empirical data and predict endogenous variables well. Overall, structural evaluation aims to improve understanding of the phenomena studied in the context of research. By analyzing the relationships between variables, researchers can identify the factors that contribute to the phenomenon and develop deeper insights into the dynamics involved.

R^2 (Coefficient of Determination) provides an overview of how well the PLS-SEM model explains variation in the observed endogenous variables (constructs). The higher the R^2 value, the greater the proportion of variation in the construct that the model can explain. R^2 allows comparison between different PLS-SEM models. Researchers can use R^2 values to compare the effectiveness of different models in explaining variation in observed constructs. Based on the table below the R^2 coefficient on the learning quality variable, a value of 0.284 is obtained, this can be interpreted as the Principal Leadership, teacher competence and infrastructure affect the learning quality variable by 28.4% and the remaining 61.6% is influenced by other variables outside the research model.

f^2 helps in determining how significant the contribution of latent variables is to the observed construct. f^2 allows comparison between the contributions of several latent variables to the same construct, so that it can be known and determine which latent variables have the strongest influence on the observed construct. So, the output effect size shows that the most dominant variable in influencing teacher competence is infrastructure ($f^2=0.223$ in the large category) and the weakest variable is teacher competence ($f^2=0.002$) in the small category.

Table 5. Measurement of Structural Model: R^2 , f^2 , Q^2

Table 3: Measurement of Structural Model: R ² , f ² , Q ²									
Variable	R ²		f ²		Redundancy		Communality		Predictive
	Value	Decision	Value	Decision	SSE	Q ² (1-SSE/SSO) >0.35	SSE	Q ² (1-SSE/SSO) >0.35	
X1. PL			0.009	Small	294		60	0.793	Strong

Variable	R2		f2		Q2				Predictive
					Redundancy		Communality		
	Value	Decision	Value	Decision	SSE	Q2 (1-	SSE	Q2 (1-	
						SSE/SSO)		SSE/SSO)	
					>0.35		>0.35		
X2. TC			0.002	Small	336		80	0.760	Strong
Y LC	0.284	Moderate	-		233	0.204	77	0.736	Strong
Z. I	0.461	Moderate	0.223	Large	270	0.284	168	0.554	Strong

The next test by looking at the value of predictive relevance (Q2) aims to validate the predictive capabilities of the model in accordance with reality in the field. Based on the table above, all Q2 values exceed the intersection point (greater than zero). The results of the calculation of predictive relevance Q2 obtained values of 0.284 to 0.204 in redundancy constructs and 0.554 to 0.793 in crossvalidated communality constructs. So the model in measuring the overall quality of learning is able to explain the modern analysis by 28.4% to 79.3% of the phenomenon studied. The results of both procedures show that the quality of learning has strong predictive power.

Measurement of Direct Effects

One of the main purposes of hypothesis testing is to examine the relationships between variables in the proposed model. This is done by analyzing the strength and significance of the relationships between the variables identified in the model. Direct effect evaluation allows researchers to test consistency between empirical findings and theories that support the model. In addition, this test analyzes the significance of the mediating effect in the research model. It is important for understanding the mechanisms underlying relationships between variables and how certain variables can mediate or change relationships between other variables.

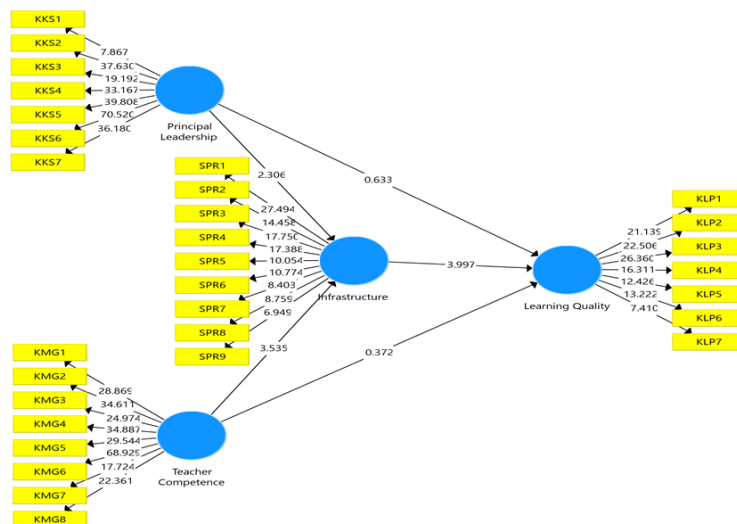


Figure 2. Evaluation of Path Analysis



H-DIR1 can be accepted with significant criteria if it has a statistical T value above 1.96. While the hypothesis can be accepted with a positive or negative influence if the acquisition of the value of the B-values coefficient shows the direction of positive or negative influence. Based on the table below, in the H1 hypothesis the principal leadership (X1) → the quality of learning (Y) obtained β -values = -0.097 and p values = 0.522 (0.05). This shows that the Principal Leadership variable (X1) has a negative and insignificant effect on the quality of learning (Y). This can be interpreted that when the principal leadership variable increases, the variable of learning quality will also increase but not significantly. In hypothesis H3, the principal leadership (X1) → infrastructure (Z) obtained β - values = 0.310 and p values = 0.015 (0.05). This shows that the principal leadership variable (X1) has a positive and significant effect on infrastructure (Z). This can be interpreted that when the principal leadership increases, the variables of infrastructure will also increase and vice versa.

Table 6. Results of Path Coofidence Dirrect Effects

Hyp.	Path Analysis	β - values (+/-)	Sample Mean	SDV	T- statistic (>1.96)	P- values (< 0.05)	Dicision
H-DIR1	KKS→KLP	-0.097	-0.091	0.152	0.641	0.522	Rejected
H-DRI2	KMG→KLP	0.053	0.031	0.149	0.355	0.723	Rejected
H-DRI3	KKS→SPR	0.310	0.218	0.127	2.434	0.015	Accepted
H-DRI4	KMG→SPR	0.480	0.483	0.129	3.714	0.000	Accepted
H-DRI5	SPR→KLP	0.544	0.566	0.142	3.824	0.000	Accepted

In H2 teacher competence (X2) → learning quality (Y) obtained β -values = 0.053 and p values = 0.723 (0.05). This shows that the teacher competency variable (X2) has a positive, but not significant effect on the quality of learning (Y). This can be interpreted that when teacher competence increases, the variable of learning quality will also increase but not significantly. In H4 teacher competence, teacher competence (X2) → infrastructure (Z) obtained β -values = 0.480 and p-values = 0.000 (0.05). This shows that the variable of teacher competence has a positive and significant effect on infrastructure (Z). This can be interpreted that when teacher competence increases, the variables of infrastructure will also increase and vice versa. In H5 infrastructure (Z) → learning quality (Y) obtained β -values = 0.544 and p values = 0.000 (0.05). This shows that the variable of infrastructure (Z) has a positive and significant effect on the quality of learning (Y). This can be interpreted that when infrastructure (Z) increase, the quality of learning (Y) will also increase and vice versa.

The mediating role of infrastructure on the influence of the Principal Leadership and teacher competence on the quality of learning

Based on the table below, in the H-IND1 hypothesis the results of testing the mediating effect of the variable infrastructure (Z) can be concluded that there is a positive influence (β -values = 0.168) and not significant (T static 1.840 >1.96 and P values 0.066 <0.05) between the Principal Leadership factor (X1) on the quality of learning (Y). So H-IND1 states "There is a positive and insignificant influence on the

role of infrastructure in mediating the principal leadership on the quality of learning". In the H-IND2 hypothesis, the results of testing the mediating effect of the variables of infrastructure (Z) can be concluded that there is a positive (β -values = 0.261) and significant (T statistic 2.521 >1.96 and P values 0.012 <0.05) between teacher competence (X2) on the quality of learning (Y). So that H-IND2 states "There is a positive and significant influence on the role of infrastructure in mediating teacher competence on the quality of learning".

Table 7. Results of Path Coofidence Dirrect Effects

Hyp.	Path Analysis	β - values (+/-)	SDV	T- statistic (>1.96)	P- values (< 0.05)	Dicision	Mediating Role
H-IND1	KKS→SPR→KLP	0.168	0.092	1.840	0.066	Rejected	Full Mediation
H-IND2	KMG→SPR→KLP	0.261	0.104	2.521	0.012	Accepted	Full Mediation

Discussion

The results of this study became the highest measuring factor for the principal leadership variable, namely decision-making ability. This means that the headmaster is able to analyze the situation well before making decisions that affect the entire school. However, this study is inconsistent with Li et al. (2023) assessment of knowledge of education personnel. So the headmaster is still weak in contributing to reforms that improve education. The results of this study are also the highest measuring factor for the principal's variable, namely the vision and mission of the school. This means that the principal transparently communicates the development and achievement of the school's vision and mission to all relevant parties (Berkovich & Eyal, 2017; Chen, 2024). However, this study is inconsistent with Kin & Abdull Kareem (2018) research related to the principal's personality. Where the principal is still inconsistent in setting an example of discipline in carrying out his duties and functions.

This research can provide an in-depth picture of how principals' leadership, infrastructure conditions and students' learning experiences relate to each other (Destari et al., 2023; Sutrisno et al., 2023). The results of this study can be used as a basis for policy making on more efficient strategies to improve learning quality, including improving infrastructure in various educational institutions. Given the critical importance of principals' leadership on infrastructure and learning quality, this study not only contributes to the educational literature but also has a practical impact on educational policy making that can improve the quality of education across schools. Therefore, this study will provide basic knowledge for policy makers, school principals and education practitioners to help improve the quality of education (Safrida et al., 2023).

The results of this study are the lowest measuring factor for teacher competence variables, namely social competence. This can mean that teachers still often have inclusive attitudes, act objectively, and discriminate against religion, gender, physical condition, race, family background, and social status. However, this study is inconsistent with Rahimi & Mosalli (2024) research on social competence. Where teachers are able to integrate social-emotional competence into teaching practices and interaction styles with students. The results of this study are the lowest measuring



factor for teacher competence variables, namely pedagogic competence, namely teachers are less able to understand the characteristics of students. However, this study is inconsistent with aa20 research on social competence (Antera, 2021; Baumgartner, 2022). Where teachers are able to integrate social-emotional competencies into teaching practices and interaction styles with students.

The influence of teacher competence on the quality of education is very large and has high urgency (Baumgartner, 2022; Cañadas, 2023). Competent teachers have the knowledge and skills necessary to convey lesson material in a way that is easily understood by students. They can use a variety of teaching methods that suit students' learning styles and facilitate an active and interactive learning process. High teacher competency has a direct impact on student academic achievement (Gao et al., 2023; Rahimi & Mosalli, 2024). Teachers who can convey material, provide constructive feedback, and provide individual support to students will help improve their understanding and academic achievement. Competent teachers contribute to increasing the school's reputation in terms of educational quality. Schools that have a quality teaching team tend to attract the interest of students and parents and gain recognition from the community and other educational institutions (Hanaysha et al., 2023; Wahyuni et al., 2020).

The results of this study became the highest measuring factor in the variable of infrastructure, namely the number of classrooms. This means that the school has covered the availability of learning facilities such as classrooms, chairs, LCD that are quite adequate. However, this study is consistent with Brink et al. (2023) research related to sports facilities. So schools are recommended to cover the availability of adequate sports facilities. The results of this study became the highest measuring factor in the variable of infrastructure, namely the number of classrooms. This means that the school has provided adequate computer and internet availability (Destari et al., 2023; Sutrisno et al., 2023). However, this study is inconsistent with Maryanti & Asjjari (2022) research on school action. Which schools need to recommend student organization spaces that are not strategically located and difficult to access to be strategic and easily accessible.

The results of this research reveal that infrastructure influences the quality of education. A comfortable and safe learning environment can help students and teachers focus on the learning process. A school building that is well maintained and equipped with adequate facilities can create an atmosphere that is conducive to learning (Kundu & Bej, 2021; Yangambi, 2023). Adequate sports and arts facilities are also important for developing students' potential outside the classroom. Through extracurricular activities and facilities, students can develop social skills, leadership, and creativity. Good infrastructure also includes facilities for teacher welfare, such as a comfortable teacher's room and health facilities. Teachers' well-being has a direct impact on the quality of their teaching and their motivation to develop students (Akram & Abdelrady, 2022; Fan, 2022).

The results of this study became the highest measuring factor in the variable of learning quality, namely in learning material. This can be interpreted that the teacher does not ensure that the learning material indicators help in determining the level of

understanding of student concepts of the material that has been taught. This study is consistent with Jiménez-Bucarey et al. (2021) research on learning climate. Where teachers are able to create a good classroom atmosphere to support more focused learning. The results of this study became the lowest measuring factor in the variable of learning quality about learning media. This can be interpreted that teachers do not ensure that learning media include the availability and accessibility of learning media to run effectively. However, this study is inconsistent with Safrida et al. (2023) research on student behavior and impact. Where teachers are able to encourage active participation of students in learning, including involving them in discussions, work groups, and practical activities.

This research is very important because it can provide insight into infrastructure role as a mediator in optimizing the positive influence of principal leadership and teacher ability on the quality of learning (Chen, 2024; Ken et al., 2023; Li et al., 2023). The results can provide a foundation for better school policy making, empowering principals to manage infrastructure, and developing teachers' abilities to improve the quality of learning. As a result, the study not only adds to the missing information, but also helps improve the education system as a whole (Machmud, 2020).

The mediating role of school infrastructure in the influence of school principal leadership on the quality of education is very important. Adequate school infrastructure can be a factor that facilitates the implementation of policies led by school principals. For example, if a school principal has a vision to increase the use of technology in learning, infrastructure such as the availability of computers and fast internet access will enable this vision to be realized more effectively (Akram & Abdelrady, 2022; Berkovich & Eyal, 2017; Haleem et al., 2022; Matitaputty & Sopacua, 2023). Good infrastructure can increase the effectiveness of a school principal's leadership by providing the necessary physical and logistical support. School principals who have adequate infrastructure will be better able to manage resources efficiently and effectively to support the learning process.

The mediating role of school infrastructure in the influence of teacher competence on the quality of education is also very important. Good school infrastructure provides physical support to teachers in carrying out their duties. Facilities such as comfortable classrooms, laboratories, libraries, and adequate technological devices will help teachers deliver material effectively and interestingly (Antera, 2021; Brink et al., 2023; Khakimov & Sharopov, 2023; Rahimi & Mosalli, 2024; Sanusi et al., 2022; Yan et al., 2022). Adequate infrastructure can also provide opportunities for teachers to develop their skills and competencies. For example, complete laboratory or library facilities can be used as learning resources and places to carry out research or experiments, thereby increasing teacher competence in teaching. Comfortable and safe infrastructure can also help maintain teachers' physical and mental well-being. A good work environment will make teachers feel appreciated and motivated to give their best in carrying out their duties.

CONCLUSION

Fundamental Finding : In terms of developing high-quality education, research on the mediating role of infrastructure in the reciprocal relationship between teacher ability and learning quality cannot be ignored. Infrastructure, which includes physical facilities, technology and other resources in the learning environment, is critical to



determining whether teachers support or hinder the teaching process. So far, the education literature has heavily emphasized the relationship between teacher ability and learning quality, with an emphasis on the positive impact of teacher ability on student achievement. **Implication :** However, how infrastructure functions as a mediator to amplify or dampen the impact of teacher ability on learning quality still needs further attention. Thus, the results of this study can not only provide a strong theoretical foundation, but can also make a real contribution to education development policies that focus on improving learning quality centered on optimizing infrastructure and improving teacher competence. This research is key to understanding the complex dynamics between these factors. **Limitation :** Based on the results of the study on the mediating role of infrastructure on the relationship between teacher competence and learning quality, it is recommended that schools and education providers should implement strategies that maximize infrastructure and teacher competency development. To create an ideal learning environment, it is first necessary to improve the school's technological and physical facilities. **Future Research :** To ensure the positive effects of infrastructure last, regular maintenance and renewal are required. Program development and teacher training should also be designed with a focus on the use of technology in the teaching and assessment process. Collaboration between school principals, teaching staff and related parties can help implement policies that support infrastructure development and teacher upgrading. Schools can implement these strategies to create innovative and high-quality learning environments that contribute positively to students' academic achievement and overall potential development.

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Commented [R1]: - Add novelty in last part of introduction
- The introduction of this paper does not clearly define the contribution(s) made by the current article and does not indicate how these are demonstrated in the remainder of the manuscript.
- This study does not discuss how significant prior work in the same field was, nor does it discuss the challenges that their work answers.
- Add 10 articles in 2024 to show up novelty
- Add research procedure in flowchart
- Add validity and reliability of instrument
- Check detail on English
- Update references based on IJORER standard
- Up quality of Figure/Table (In English)
- This paper is poorly written - confusing, sloppy, and/or inaccurate. Gross grammatical, poor language quality, spelling, and/or punctuation errors (language, writing, and spelling issues).
- Please proofread, improve quality, full comment in paper



The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?



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ABSTRACT

Objective: Good infrastructure can help teachers in presenting learning materials better. Infrastructure can also assist principals in conducting school administration management more efficiently, so that they can focus on developing the quality of learning. This study aims to explore the role of infrastructure as a mediator of the influence of principal leadership and teacher competence on the quality of learning. **Method:** This study used a quantitative survey method to 42 teachers at SMAN 1 Kawedanan Magetan who were selected by random sampling. Data collection was carried out using a questionnaire consisting of a Likert scale with 5 points. PLS-SEM analysis is used to analyze data and test conceptual models. Data analysis techniques include statistical tests to test relationships and mediation. **Results:** The results showed that the quality of learning was directly influenced insignificantly by the principal ($\beta = -0.097$; $p = 0.522$) and teacher competence. **Novelty:** But infrastructure mediates significantly in improving the quality of learning. Schools and educational institutions need to invest time and resources in training and professional development for teachers and principals such as leadership, classroom management, and effective teaching methods. The overall quality of learning will improve when the principal is able to lead the school towards a clear vision of learning and teachers have adequate skills and knowledge to effectively plan, implement and evaluate learning.

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INTRODUCTION

Quality is a measure of the good and bad of something, levels, quality degrees or levels. Meanwhile, learning is an effort to change student behavior for the better. According to Jiménez-Bucarey et al. (2021) learning quality is a standard process related to the implementation of learning in an education to achieve graduate competence. The quality of learning is also referred to as the level of achievement of learning objectives in learning activities (Chandra et al., 2019; Khakimov & Sharopov, 2023; Mulay & Khanna, 2020). Creating a good quality of learning is not an easy thing to achieve. Because, many variables are influential in determining the quality of learning in these schools, such as the principal leadership model, school culture, and teaching and learning process. Furthermore Safrida et al. (2023) explained that there were also challenges in improving the quality of learning in schools, including because teachers have not fully realized their responsibilities in planning and implementing learning activities that have optimal quality, limited infrastructure, lack of student awareness about the importance of learning optimally, a weak discipline culture, teaching strategies or methods that less varied (Demissie & Egziabher, 2022; Fanggidae, 2018; Kundu & Bej, 2021; Sutrisno et al., 2023)

According to Kamrat et al. (2022) mentions several components that must be considered to improve the quality of education including effective and positive leadership, high expectations, monitoring student progress, student responsibility and their participation, intensives and rewards, parental involvement in school life, planning and consistent approach. According to Jiménez-Bucarey et al. (2021), Khakimov & Sharopov (2023), and Sutrisno et al. (2023) schools have seven quality indicators

including curriculum, achievement, learning and teaching, student support, school ethos, resources, and leadership management and quality assurance. According to Mulay & Khanna (2020) there are several indicators that support improving the quality of history learning, including teacher expertise, infrastructure for history learning, academic culture, student perceptions of history learning, and student encouragement.

The importance of principal leadership relates to the principal's need to increase opportunities to hold effective meetings with teachers in a conducive environment (Putra et al., 2022; Safrida et al., 2023). A positive school behavior principal can encourage, direct and encourage teacher performance by showing a feeling of friendship, closeness and consideration towards teachers, both as a group and individually. Instrumental principal behavior is tasks that are oriented and directly clarified in the roles and responsibilities of teachers, both as a group and individually (Berkovich & Eyal, 2017; Ken et al., 2023). Apart from the principal leadership, teacher ability is very important to improve the quality of learning. Competent teachers have the right knowledge and skills to teach as well as the ability to manage the classroom well. Competent teachers can also motivate students to learn in an effective way and support their cognitive, social and emotional development (Kamrat et al., 2022; Matitaputty & Sopacua, 2023).

According to Galdames-Calderón (2023) that school principals have many roles in carrying out their responsibilities, one of which is being able to act as an educator for teaching and educational staff. As educators, school principals must continue to strive to improve the quality of teacher learning. In this case, the experience factor will greatly influence the professionalism of school principals, especially in helping to shape the education staff's understanding of what they are learning. According to Li et al. (2023) which states that the commitment of teachers and school principals is the most important component in efforts to improve teacher competence. This shows that teachers and principals have a relationship that influences each other in the school structure. However, the position of principal tends to provide direction and training on teacher abilities and performance (Puruwita et al., 2022; Wahyudi et al., 2023). One of the training that can be provided by school principals is to strengthen the potential, role and function of teachers as educators.

According to Berkovich & Eyal (2017) the factors that support the principal leadership management in improving the performance of teachers and education are as follows: internal factors include the principal's ability to manage various school plans and patience in dealing with different teachers. External factors include adequate school facilities and parental support. According to Demissie & Egziabher (2022) that the most common factors that influence employee performance are competence (ability), leadership, recovery, motivation, education and training, experience, work environment, organizational culture, and job satisfaction. The results show that the variables of motivation, leadership, and organizational culture are still highly debated.

A teacher is a person who can build an interesting, safe, comfortable and conducive learning environment (Brink et al., 2023; Hanaysha et al., 2023). If he is among the students, he can help reduce the atmosphere of harsh learning, rigidity, and boredom. Not everyone is able to overcome such conditions, so a teacher must have expertise. The author is aware that the existence of professional teachers is very important (Antera, 2021; Baumgartner, 2022). A quality education process is influenced by professional teachers. They must have the ability to actualize themselves and discover their own



identity if they want to become professionals. Over the past decades, educational development has been given very low priority, which has had a significant negative impact on national and international life (Codina & Robinson, 2024).

According to Antera (2021), Codina & Robinson (2024), and Puruwita et al. (2022) there are several factors that cause teachers to not always have competencies that meet standards or are even far from standards. Internal factors consist of an individual's educational background, teaching experience, work ethic, upgrading and training, while external factors come from outside the individual such as workplace climax, organizational welfare, workplace social environment, infrastructure, etc. As a result of interactions with each other, the quality of teacher competence in carrying out the learning process can be influenced. According to Sutrisno et al. (2023) in efforts to improve the quality of education, the lack of professional competence of teachers is clearly still a problem. Teachers must be supported by various abilities, such as pedagogical abilities, professional abilities, personality abilities, and social abilities. Teachers must not only inform students, but must also act as managers of learning resources that benefit their students (Ma`arif et al., 2023). Teachers must have the ability to utilize information and impacts from various branches of science to improve their critical thinking abilities.

Management of educational infrastructure can also be defined as a cooperative process of utilizing educational infrastructure effectively and efficiently (Destari et al., 2023; Kundu & Bej, 2021). Management of educational infrastructure includes the management of all tools, materials and other facilities used in learning activities so that the teaching and learning process can run well (Akram & Abdelrady, 2022; Brink et al., 2023; Destari et al., 2023; Sanusi et al., 2022). According to this definition, existing infrastructure in higher education institutions must be utilized and managed for the benefit of the learning process. This management is intended to ensure that the use of infrastructure runs effectively and efficiently. In higher education institutions, management of infrastructure is very important because it will really help the learning process.

LITERATURE REVIEW

The influence of principal leadership on infrastructure and the quality of learning

Studies on the influence of school principals' leadership on infrastructure and the quality of learning show that improving the quality of education is very important. It is recognized that the leadership of the principal is a major component that has the ability to determine the course and success of the educational institution (Berkovich & Eyal, 2017; Kin & Abdull Kareem, 2018). School principals have an important role in designing policies, allocating resources, and managing infrastructure well through visionary and proactive leadership. Because it functions as an infrastructure that supports the learning process, sap is very important. The success of the principal in managing infrastructure can create a safe, comfortable, and adequate learning environment. In this context, research can show how headmaster leadership influences planning, resource allocation, and improvement of infrastructure as a support for learning quality. Such factors greatly influence the quality of learning, as a measure of

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educational success (Galdames-Calderón, 2023; Li et al., 2023). Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis:

H-IND1&2: principal leadership has an effect on improving the quality of learning and infrastructure

The influence of teacher competence on in frastructure and the quality of learning

In education, the ability of teachers is very important to determine the quality of learning in schools. According to (Jiménez-Bucarey et al., 2021; Kamrat et al., 2022) high-quality teachers can improve students' academic achievement. However, it is important to remember that teacher abilities include not only teaching skills, but also the ability to use and maintain infrastructure that support learning. Studies show that teachers' abilities not only affect their direct interactions with students, but also how students use infrastructure in the classroom (Brink et al., 2023; Hanaysha et al., 2023). The ability of teachers not only affects their direct interaction with students, but also how students use infrastructure in the classroom. Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis:

H-IND2&4 : teacher competence has an effect on improving the quality of learning and infrastructure

The influence of infrastructure on the quality of learning

The influence of infrastructure on the quality of education is important. Good infrastructure in the educational context includes various things, such as safe and comfortable school buildings, complete libraries, sports facilities, computer laboratories, and adequate transportation facilities for students and teachers. Good infrastructure ensures that education is accessible to everyone without physical or geographical barriers. Schools that are easy to reach for students and teachers can increase participation and attendance in the learning process. Infrastructure such as computer laboratories, science laboratories, and well-equipped libraries can improve the quality of teaching by providing teachers with the means to deliver material interactively and stimulate students' interest in learning (Haleem et al., 2022; Matitaputty & Sopacua, 2023; Sanusi et al., 2022). Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis:

H-IND5 : infrastructure have an effect on improving the quality of learning

The influence of the mediating role of infrastructure on the influence of the principal leadership and teacher competence on the quality of learning

To improve the education system, research on the role of mediation of infrastructure in the relationship between the leadership of school principals and teacher competence on the quality of learning is very important (Destari et al., 2023; Sutrisno et al., 2023). Infrastructure, which include physical facilities, technology, and other resources, are essential to the educational environment. All this contributes to the comfort and effectiveness of the learning process (Brink et al., 2023; Hanaysha et al., 2023; Kundu & Bej, 2021). Many studies acknowledge the importance of headmaster leadership as an agent of change in the management of infrastructure . A good headmaster can direct and encourage school resources with strategies, including ensuring infrastructure is available. Nonetheless, there are questions about how the role of infrastructure can



balance the impact of headmaster leadership on the quality of learning (Khakimov & Sharopov, 2023; Safrida et al., 2023; Yan et al., 2022). Regarding the continuity between the concept and the results of previous research, we formulate the following hypothesis: **H-IND1&2:** infrastructure mediate the positive influence on the influence of principal leadership and teacher competence on the quality of learning

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RESEARCH METHOD

This type of research uses quantitative analysis with data collection techniques using questionnaires (Apriliani et al., 2023; Putra et al., 2022; Widayanto et al., 2021). This research design uses an explanatory and correlational approach using Partial Least Squares Structural Equation Modeling (PLS-SEM) which is an approach used to explore the relationship between variables in a conceptual model. PLS-SEM is a multivariate statistical method used to analyze the relationship between latent or measured variables in a structural model. By using this approach, this research combines explanatory and correlational elements to better understand the complexity of the relationships between variables in a conceptual model. PLS-SEM allows researchers to test models holistically, including identifying cause-and-effect relationships and correlation relationships between variables, thereby providing a deeper understanding of the observed phenomena.

Research design with an explanatory and correlational approach to determine the relationship between independent variables (principal leadership and teacher competency), mediation (infrastructure), and dependent variables (learning quality). The research method used a survey through purposive sampling. The sample for this research was teachers at SMAN 1 Kawedanan magetan with a total sample of 42 respondents. Data collection was carried out using a survey method via Google Forms. The measurement uses a 4-point Likert scale measurement, namely from 1 = disagree, to 4 = strongly agree (Daryono et al., 2020; Widyastuti et al., 2023). Research instrument variables are shown in Table 1.

Table 1. Research Variable Construct

Variables	Indicators	Construct	References
Principal Leadership (X1)	Personality	KKS 1	(Berkovich & Eyal, 2017;
	Knowledge of educational staff	KKS 2	Chen, 2024; Galdames-
		KKS 3	Calderón, 2023; Ken et al.,
	School vision and mission	KKS 4	2023; Kin & Abdull
		KKS 5	Kareem, 2018; Li et al.,
	Professional abilities	KKS 6	2023)
		KKS 7	
Teacher Competency (X2)	Pedagogical competence	KMG 1	(Antera, 2021;
		KMG 2	Baumgartner, 2022;
		KMG 3	Cañadas, 2023; Gao et al.,
	Personality competency	KMG 4	2023; Hanaysha et al., 2023;
		KMG 5	Rahimi & Mosalli, 2024;
		KMG 6	Wahyuni et al., 2020)
	Social competence	KMG 7	

Variables	Indicators	Construct	References
Learning Quality (Y)	Teacher behavior	KLP 1	(Jiménez-Bucarey et al., 2021; Kamrat et al., 2022; Khakimov & Sharopov, 2023; Matitaputty & Sopacua, 2023; Safrida et al., 2023; Yan et al., 2022)
	Student learning behavior and impact	KLP 2	
	learning climate	KLP 3	
	learning materials	KLP 4	
	instructional Media	KLP 5	
	learning system	KLP 6	
		KLP 7	
Infrastructure (Z)	Number of Classrooms	SPR 1	(Akram & Abdelrady, 2022; Brink et al., 2023; Destari et al., 2023; Haleem et al., 2022; Hanaysha et al., 2023; Sanusi et al., 2022; Sutrisno et al., 2023)
		SPR 2	
		SPR 3	
	Library Availability	SPR 4	
		SPR 5	
	Laboratory facilities	SPR 6	
	Sports facilities	SPR 7	
	Accessibility	SPR 8	
		SPR 9	

Statistical analysis of this research uses the PLS-SEM measurement technique. The outer model testing stage is a measurement model testing stage that aims to prove the validity and estimate the reliability of indicators and constructs. Several requirements that must be met are the indicator loading factor ($\lambda > 0.70$), and the reflective construct AVE (> 0.50) (Daryono et al., 2024; Fauzan et al., 2023; Supriyanto et al., 2022). Reliability estimates use Cronbach Alpha, ρ_A , and CR values (> 0.70). The goodness of fit model testing stage aims to test the predictive power of the model and the feasibility of the model. The criteria that must be met include predictive relevance to see the predictive power of the model on the blindfolding output (Daryono et al., 2023; Hariyanto et al., 2022). The inner model testing stage is to test the significance of the direct (H-DIR1-5) and indirect effects (the mediating role of H-IND1-2).

RESULTS AND DISCUSSION

Results

Evaluation of Measurement Models

Evaluation of measurement models is very important to ensure that the indicators used to measure latent constructs or variables are by the research objectives and have good quality. Examining construct validity is the primary goal of measuring model evaluation. Analysing the relationship between the indicator and the measured construct can ensure that the indicator truly reflects the intended aspect of the construct. By analyzing factor loadings, reliability, and discriminant validity, researchers can decide which indicators should be included in the analysis and which should be omitted.

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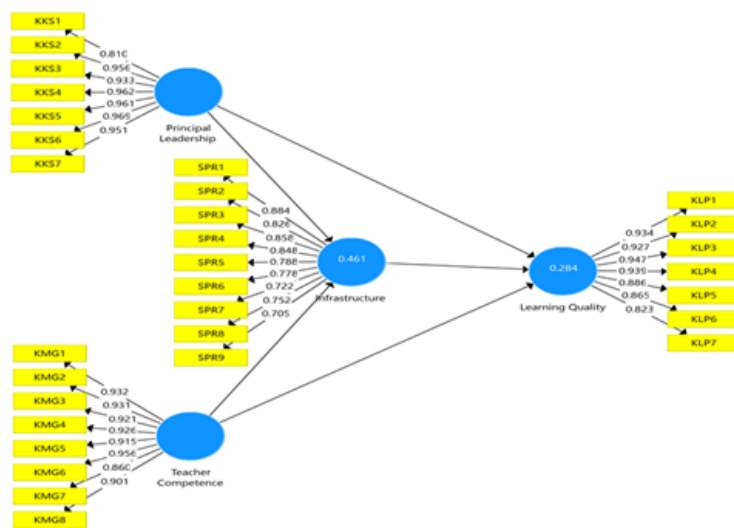


Figure 1. Evaluation of the Measurement Model

The convergent validity measurement has a standard loading factor value limit of 0.7. Based on the value of the factor loading coefficient in Table 2, the most dominant question item in measuring the principal leadership variabe (X) is professional ability of 0.969 (PSC 6). While the weakest item in the variety of infrastructure is the construction of laboratory facilities of 0.722 (SPR7). The Avrage Extracted Variance (AVE) value of each variable has a value of >0.50, namely the principal leadership (X1) of 0.876; teacher competence (X2) of 0.843; learning quality (Y) of 0.636; and infrastructure 0.817. So it can be concluded that each subvariable and variance in the instrument in the research model has met the requirements of convergent validity. The SmartPLS output in Table 3 below shows that all variables have CA values (0.928 to 0.0932), rho_A (0.931 to 0.982), and CR (0.940 to 0.980). So it can be concluded that the internal consistency of the instrument in 4 aspects has a value of >0.70.

Table 2. Outer Model: Convergent Validity

Variables	Indicators	Conver Validity		Consistency Reliability		
		FL (>0.70)	AVE (>0.50)	CA (α>0.70)	Rho-A (φ>0.70)	CR (>0.70)
Principal Leadership(X1)	KKS 1	0.810	0.876	0.976	0.982	0.980
	KKS 2	0.956				
	KKS 3	0.933				
	KKS 4	0.962				
	KKS 5	0.961				
	KKS 6	0.969				
	KKS 7	0.951				
Teacher	KMG 1	0.932	0.843	0.973	0.976	0.977

Variables	Indicators	Conver Validity		Consistency Reliability		
		FL (>0.70)	AVE (>0.50)	CA (α >0.70)	Rho-A (ρ >0.70)	CR (>0.70)
Competency(X2)	KMG 2	0.931				
	KMG 3	0.921				
	KMG 4	0.926				
	KMG 5	0.915				
	KMG 6	0.956				
	KMG 7	0.860				
	KMG 8	0.901				
Infrastructure(Z)	SPR 1	0.884	0.817	0.928	0.931	0.940
	SPR 2	0.826				
	SPR 3	0.858				
	SPR 4	0.848				
	SPR 5	0.788				
	SPR 6	0.778				
	SPR 7	0.722				
	SPR 8	0.752				
	SPR 9	0.705				
Learning Quality(Y)	KLP 1	0.934	0.636	0.962	0.968	0.969
	KLP 2	0.927				
	KLP 3	0.947				
	KLP 4	0.939				
	KLP 5	0.886				
	KLP 6	0.865				
	KLP 7	0.823				

The Fornell-Larcker test is one of the methods used in Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the discriminant validity of the constructs in a model. This test aims to ensure that the different constructs in the model can be distinguished from each other. This is done by comparing the variance explained by the construct with the variance explained by other constructs in the model. If the variance explained by a construct is greater than the variance explained by another construct, then the construct has good discriminant validity. When viewed from the correlation value in Table 3, the correlation value of principal leadership (X1) is 0.936, greater than the correlation value of teacher competence (X2) of 0.918, followed by the quality of learning (Y) of 0.904, and the lowest correlation value of sarpas (0.798). Likewise for the assessment of correlation of other variables.

Table 3. Discriminant Validity: The Fornell Larcker

Variables	X1	X2	Y	Z
X1. Principal Leadership	0.936			
X2. Teacher Competence	0.453	0.918		
Y. Learning Quality	0.214	0.346	0.904	
Z. Infrastructure	0.527	0.620	0.526	0.798

One of the main purposes of HTMT testing is to measure the validity of discriminants in models. HTMT is used to check the extent to which constructs measured by different indicators represent the same or different constructs in the



model. HTMT is also useful for assessing multicholinerity between constructs in models. Multicholinerity can occur when constructs are strongly interrelated, which can lead to problems in the estimation and interpretation of results in SEM analysis. Meanwhile, the PLS algorithm test results in Table 4 show that the HTMT value in all dimensions is <0.90 (0.213 to 0.644).

Table 4. Discriminant Validity: The HTMT

Variables	X1	X2	Y	Z
X1. Principal Leadership				
X2. Teacher Competence	0.462			
Y. Learning Quality	0.213	0.347		
Z. Infrastructure	0.555	0.644	0.547	

Evaluation of Structural Models

Structural evaluation in testing on PLS-SEM has the main objective of assessing the accuracy of the predictions of the proposed model. This is done by evaluating the extent to which the model is able to explain variations in empirical data and predict endogenous variables well. Overall, structural evaluation aims to improve understanding of the phenomena studied in the context of research. By analyzing the relationships between variables, researchers can identify the factors that contribute to the phenomenon and develop deeper insights into the dynamics involved.

R² (Coefficient of Determination) provides an overview of how well the PLS-SEM model explains variation in the observed endogenous variables (constructs). The higher the R² value, the greater the proportion of variation in the construct that the model can explain. R² allows comparison between different PLS-SEM models. Researchers can use R² values to compare the effectiveness of different models in explaining variation in observed constructs. Based on the table below the R² coefficient on the learning quality variable, a value of 0.284 is obtained, this can be interpreted as the Principal Leadership, teacher competence and infrastructure affect the learning quality variable by 28.4% and the remaining 61.6% is influenced by other variables outside the research model.

f² helps in determining how significant the contribution of latent variables is to the observed construct. f² allows comparison between the contributions of several latent variables to the same construct, so that it can be known and determine which latent variables have the strongest influence on the observed construct. So, the output effect size shows that the most dominant variable in influencing teacher competence is infrastructure (f²=0.223 in the large category) and the weakest variable is teacher competence (f²= 0.002) in the small category.

Table 5. Measurement of Structural Model: R2, f2, Q2

Table 3. Measurement of Structural Model: R2/ f2/ Q2									
Variable	R2		f2		Redundancy		Communality		Predictive
	Value	Decision	Value	Decision	SSE	Q2 (1-	SSE	Q2 (1-	
						SSE/SSO) >0.35		SSE/SSO) >0.35	
X1. PL			0.009	Small	294		60	0.793	Strong

Variable	R2		f2		Q2				Predictive
					Redundancy		Communality		
					Q2 (1- SSE/SSO) >0.35		Q2 (1- SSE/SSO) >0.35		
	Value	Decision	Value	Decision	SSE		SSE		
X2. TC			0.002	Small	336		80	0.760	Strong
Y LC	0.284	Moderate	-		233	0.204	77	0.736	Strong
Z. I	0.461	Moderate	0.223	Large	270	0.284	168	0.554	Strong

The next test by looking at the value of predictive relevance (Q²) aims to validate the predictive capabilities of the model in accordance with reality in the field. Based on the table above, all Q² values exceed the intersection point (greater than zero). The results of the calculation of predictive relevance Q² obtained values of 0.284 to 0.204 in redundancy constructs and 0.554 to 0.793 in crossvalidated communality constructs. So the model in measuring the overall quality of learning is able to explain the modern analysis by 28.4% to 79.3% of the phenomenon studied. The results of both procedures show that the quality of learning has strong predictive power.

Measurement of Direct Effects

One of the main purposes of hypothesis testing is to examine the relationships between variables in the proposed model. This is done by analyzing the strength and significance of the relationships between the variables identified in the model. Direct effect evaluation allows researchers to test consistency between empirical findings and theories that support the model. In addition, this test analyzes the significance of the mediating effect in the research model. It is important for understanding the mechanisms underlying relationships between variables and how certain variables can mediate or change relationships between other variables.

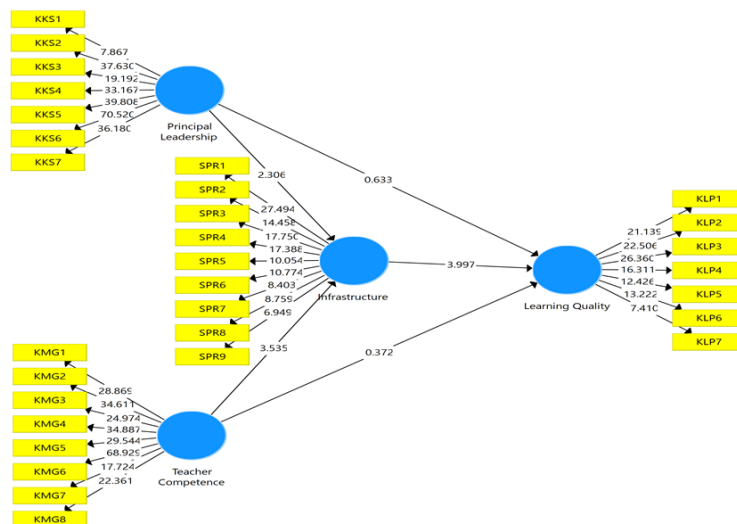


Figure 2. Evaluation of Path Analysis



H-DIR1 can be accepted with significant criteria if it has a statistical T value above 1.96. While the hypothesis can be accepted with a positive or negative influence if the acquisition of the value of the B-values coefficient shows the direction of positive or negative influence. Based on the table below, in the H1 hypothesis the principal leadership (X1) → the quality of learning (Y) obtained β -values = -0.097 and p values = 0.522 (0.05). This shows that the Principal Leadership variable (X1) has a negative and insignificant effect on the quality of learning (Y). This can be interpreted that when the principal leadership variable increases, the variable of learning quality will also increase but not significantly. In hypothesis H3, the principal leadership (X1) → infrastructure (Z) obtained β - values = 0.310 and p values = 0.015 (0.05). This shows that the principal leadership variable (X1) has a positive and significant effect on infrastructure (Z). This can be interpreted that when the principal leadership increases, the variables of infrastructure will also increase and vice versa.

Table 6. Results of Path Coofidence Dirrect Effects

Hyp.	Path Analysis	β - values (+/-)	Sample Mean	SDV	T- statistic (>1.96)	P- values (< 0.05)	Dicision
H-DIR1	KKS→KLP	-0.097	-0.091	0.152	0.641	0.522	Rejected
H-DRI2	KMG→KLP	0.053	0.031	0.149	0.355	0.723	Rejected
H-DRI3	KKS→SPR	0.310	0.218	0.127	2.434	0.015	Accepted
H-DRI4	KMG→SPR	0.480	0.483	0.129	3.714	0.000	Accepted
H-DRI5	SPR→KLP	0.544	0.566	0.142	3.824	0.000	Accepted

In H2 teacher competence (X2) → learning quality (Y) obtained β -values = 0.053 and p values = 0.723 (0.05). This shows that the teacher competency variable (X2) has a positive, but not significant effect on the quality of learning (Y). This can be interpreted that when teacher competence increases, the variable of learning quality will also increase but not significantly. In H4 teacher competence, teacher competence (X2) → infrastructure (Z) obtained β -values = 0.480 and p-values = 0.000 (0.05). This shows that the variable of teacher competence has a positive and significant effect on infrastructure (Z). This can be interpreted that when teacher competence increases, the variables of infrastructure will also increase and vice versa. In H5 infrastructure (Z) → learning quality (Y) obtained β -values = 0.544 and p values = 0.000 (0.05). This shows that the variable of infrastructure (Z) has a positive and significant effect on the quality of learning (Y). This can be interpreted that when infrastructure (Z) increase, the quality of learning (Y) will also increase and vice versa.

The mediating role of infrastructure on the influence of the Principal Leadership and teacher competence on the quality of learning

Based on the table below, in the H-IND1 hypothesis the results of testing the mediating effect of the variable infrastructure (Z) can be concluded that there is a positive influence (β -values = 0.168) and not significant (T static 1.840 >1.96 and P values 0.066 <0.05) between the Principal Leadership factor (X1) on the quality of learning (Y). So H-IND1 states "There is a positive and insignificant influence on the

role of infrastructure in mediating the principal leadership on the quality of learning". In the H-IND2 hypothesis, the results of testing the mediating effect of the variables of infrastructure (Z) can be concluded that there is a positive (β -values = 0.261) and significant (T statistic 2.521 >1.96 and P values 0.012 <0.05) between teacher competence (X2) on the quality of learning (Y). So that H-IND2 states "There is a positive and significant influence on the role of infrastructure in mediating teacher competence on the quality of learning".

Table 7. Results of Path Coofidence Dirrect Effects

Hyp.	Path Analysis	β - values (+/-)	SDV	T- statistic (>1.96)	P- values (< 0.05)	Dicision	Mediating Role
H-IND1	KKS→SPR→KLP	0.168	0.092	1.840	0.066	Rejected	Full Mediation
H-IND2	KMG→SPR→KLP	0.261	0.104	2.521	0.012	Accepted	Full Mediation

Discussion

The results of this study became the highest measuring factor for the principal leadership variable, namely decision-making ability. This means that the headmaster is able to analyze the situation well before making decisions that affect the entire school. However, this study is inconsistent with Li et al. (2023) assessment of knowledge of education personnel. So the headmaster is still weak in contributing to reforms that improve education. The results of this study are also the highest measuring factor for the principal's variable, namely the vision and mission of the school. This means that the principal transparently communicates the development and achievement of the school's vision and mission to all relevant parties (Berkovich & Eyal, 2017; Chen, 2024). However, this study is inconsistent with Kin & Abdull Kareem (2018) research related to the principal's personality. Where the principal is still inconsistent in setting an example of discipline in carrying out his duties and functions.

This research can provide an in-depth picture of how principals' leadership, infrastructure conditions and students' learning experiences relate to each other (Destari et al., 2023; Sutrisno et al., 2023). The results of this study can be used as a basis for policy making on more efficient strategies to improve learning quality, including improving infrastructure in various educational institutions. Given the critical importance of principals' leadership on infrastructure and learning quality, this study not only contributes to the educational literature but also has a practical impact on educational policy making that can improve the quality of education across schools. Therefore, this study will provide basic knowledge for policy makers, school principals and education practitioners to help improve the quality of education (Safrida et al., 2023).

The results of this study are the lowest measuring factor for teacher competence variables, namely social competence. This can mean that teachers still often have inclusive attitudes, act objectively, and discriminate against religion, gender, physical condition, race, family background, and social status. However, this study is inconsistent with Rahimi & Mosalli (2024) research on social competence. Where teachers are able to integrate social-emotional competence into teaching practices and interaction styles with students. The results of this study are the lowest measuring

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factor for teacher competence variables, namely pedagogic competence, namely teachers are less able to understand the characteristics of students. However, this study is inconsistent with aa20 research on social competence (Antera, 2021; Baumgartner, 2022). Where teachers are able to integrate social-emotional competencies into teaching practices and interaction styles with students.

The influence of teacher competence on the quality of education is very large and has high urgency (Baumgartner, 2022; Cañadas, 2023). Competent teachers have the knowledge and skills necessary to convey lesson material in a way that is easily understood by students. They can use a variety of teaching methods that suit students' learning styles and facilitate an active and interactive learning process. High teacher competency has a direct impact on student academic achievement (Gao et al., 2023; Rahimi & Mosalli, 2024). Teachers who can convey material, provide constructive feedback, and provide individual support to students will help improve their understanding and academic achievement. Competent teachers contribute to increasing the school's reputation in terms of educational quality. Schools that have a quality teaching team tend to attract the interest of students and parents and gain recognition from the community and other educational institutions (Hanaysha et al., 2023; Wahyuni et al., 2020).

The results of this study became the highest measuring factor in the variable of infrastructure, namely the number of classrooms. This means that the school has covered the availability of learning facilities such as classrooms, chairs, LCD that are quite adequate. However, this study is consistent with Brink et al. (2023) research related to sports facilities. So schools are recommended to cover the availability of adequate sports facilities. The results of this study became the highest measuring factor in the variable of infrastructure, namely the number of classrooms. This means that the school has provided adequate computer and internet availability (Destari et al., 2023; Sutrisno et al., 2023). However, this study is inconsistent with Maryanti & Asjjari (2022) research on school action. Which schools need to recommend student organization spaces that are not strategically located and difficult to access to be strategic and easily accessible.

The results of this research reveal that infrastructure influences the quality of education. A comfortable and safe learning environment can help students and teachers focus on the learning process. A school building that is well maintained and equipped with adequate facilities can create an atmosphere that is conducive to learning (Kundu & Bej, 2021; Yangambi, 2023). Adequate sports and arts facilities are also important for developing students' potential outside the classroom. Through extracurricular activities and facilities, students can develop social skills, leadership, and creativity. Good infrastructure also includes facilities for teacher welfare, such as a comfortable teacher's room and health facilities. Teachers' well-being has a direct impact on the quality of their teaching and their motivation to develop students (Akram & Abdelrady, 2022; Fan, 2022).

The results of this study became the highest measuring factor in the variable of learning quality, namely in learning material. This can be interpreted that the teacher does not ensure that the learning material indicators help in determining the level of

understanding of student concepts of the material that has been taught. This study is consistent with Jiménez-Bucarey et al. (2021) research on learning climate. Where teachers are able to create a good classroom atmosphere to support more focused learning. The results of this study became the lowest measuring factor in the variable of learning quality about learning media. This can be interpreted that teachers do not ensure that learning media include the availability and accessibility of learning media to run effectively. However, this study is inconsistent with Safrida et al. (2023) research on student behavior and impact. Where teachers are able to encourage active participation of students in learning, including involving them in discussions, work groups, and practical activities.

This research is very important because it can provide insight into infrastructure role as a mediator in optimizing the positive influence of principal leadership and teacher ability on the quality of learning (Chen, 2024; Ken et al., 2023; Li et al., 2023). The results can provide a foundation for better school policy making, empowering principals to manage infrastructure, and developing teachers' abilities to improve the quality of learning. As a result, the study not only adds to the missing information, but also helps improve the education system as a whole (Machmud, 2020).

The mediating role of school infrastructure in the influence of school principal leadership on the quality of education is very important. Adequate school infrastructure can be a factor that facilitates the implementation of policies led by school principals. For example, if a school principal has a vision to increase the use of technology in learning, infrastructure such as the availability of computers and fast internet access will enable this vision to be realized more effectively (Akram & Abdelrady, 2022; Berkovich & Eyal, 2017; Haleem et al., 2022; Matitaputty & Sopacua, 2023). Good infrastructure can increase the effectiveness of a school principal's leadership by providing the necessary physical and logistical support. School principals who have adequate infrastructure will be better able to manage resources efficiently and effectively to support the learning process.

The mediating role of school infrastructure in the influence of teacher competence on the quality of education is also very important. Good school infrastructure provides physical support to teachers in carrying out their duties. Facilities such as comfortable classrooms, laboratories, libraries, and adequate technological devices will help teachers deliver material effectively and interestingly (Antera, 2021; Brink et al., 2023; Khakimov & Sharopov, 2023; Rahimi & Mosalli, 2024; Sanusi et al., 2022; Yan et al., 2022). Adequate infrastructure can also provide opportunities for teachers to develop their skills and competencies. For example, complete laboratory or library facilities can be used as learning resources and places to carry out research or experiments, thereby increasing teacher competence in teaching. Comfortable and safe infrastructure can also help maintain teachers' physical and mental well-being. A good work environment will make teachers feel appreciated and motivated to give their best in carrying out their duties.

CONCLUSION

Fundamental Finding : In terms of developing high-quality education, research on the mediating role of infrastructure in the reciprocal relationship between teacher ability and learning quality cannot be ignored. Infrastructure, which includes physical facilities, technology and other resources in the learning environment, is critical to



determining whether teachers support or hinder the teaching process. So far, the education literature has heavily emphasized the relationship between teacher ability and learning quality, with an emphasis on the positive impact of teacher ability on student achievement. **Implication :** However, how infrastructure functions as a mediator to amplify or dampen the impact of teacher ability on learning quality still needs further attention. Thus, the results of this study can not only provide a strong theoretical foundation, but can also make a real contribution to education development policies that focus on improving learning quality centered on optimizing infrastructure and improving teacher competence. This research is key to understanding the complex dynamics between these factors. **Limitation :** Based on the results of the study on the mediating role of infrastructure on the relationship between teacher competence and learning quality, it is recommended that schools and education providers should implement strategies that maximize infrastructure and teacher competency development. To create an ideal learning environment, it is first necessary to improve the school's technological and physical facilities. **Future Research :** To ensure the positive effects of infrastructure last, regular maintenance and renewal are required. Program development and teacher training should also be designed with a focus on the use of technology in the teaching and assessment process. Collaboration between school principals, teaching staff and related parties can help implement policies that support infrastructure development and teacher upgrading. Schools can implement these strategies to create innovative and high-quality learning environments that contribute positively to students' academic achievement and overall potential development.

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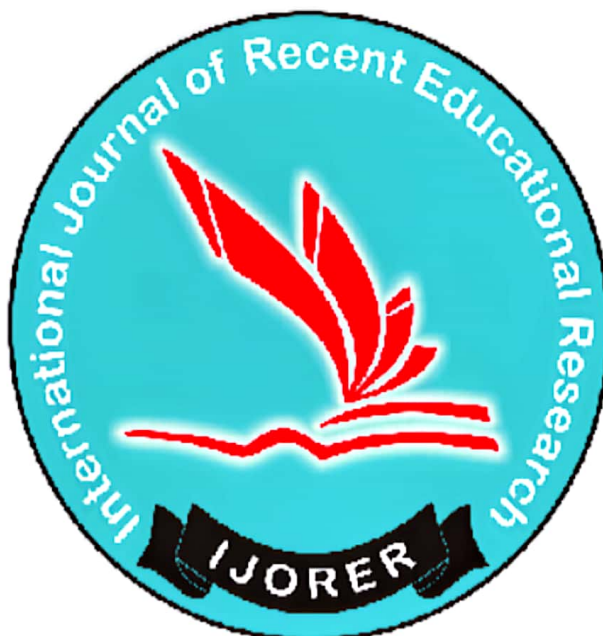
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Kafifahdhi Mukaromah, Wilis Werdiningsih, Rihab Wit Daryono
(Author):

The editing of your submission, "The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?," is complete. We are now sending it to production.

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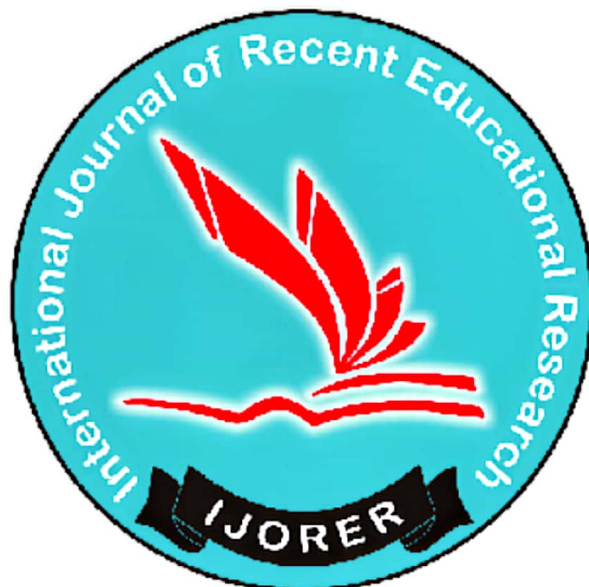
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Latter of Acceptance (LoA) Manuscript of The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?



Letter of Acceptance

Number: 637/IJORER/LoA/VII/2024

ID Manuscript : 637
 Author(s) : Kafifahdhi Mukaromah, Wilis werdiningsih, Rihab Wit Daryono
 Accepted : July 1, 2024
 Title : The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?

Dear Authors

The Editorial Team of IJORER : International Journal of Recent Educational Research, is pleased to inform you that your manuscript “The Effects of Principal Leadership and Teacher Competence on the Learning Quality: Does the Mediation of Infrastructure Matter?” as mentioned above has been accepted for the publication in next issue (**Vol. 5 2024**).

Surabaya, July 04, 2024

Thank you for working with us.

B Prahani

Assoc. Prof. Dr. Binar Kurnia Prahani
Editor in Chief

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IAIN Ponorogo, Ponorogo, Indonesia

Rihab Wit Daryono
IAIN Ponorogo, Ponorogo, Indonesia

DOI: <https://doi.org/10.46245/ijorer.v5i4.637>

Keywords: Principal leadership, Teacher competence, Infrastructure, quality of learning

ABSTRACT

Objective: Good infrastructure can help teachers in presenting learning materials better. Infrastructure can also assist principals in conducting school administration management more efficiently to focus on developing the quality of learning. This study aims to explore the role of infrastructure as a mediator of the influence of principal leadership and teacher competence on the quality of learning. **Method:** This study used a quantitative survey of randomly selected 42 teachers at SHS 1 Kawedanan Magetan. Data collection was carried out using a questionnaire consisting of a Likert scale with 5 points. PLS-SEM analysis is used to analyze data and test conceptual models. Data analysis techniques include statistical tests to test relationships and mediation. **Results:** The results showed that the quality of learning was directly influenced insignificantly by the principal ($\beta = -0.097$; $p = 0.522$) and teacher competence. **Novelty:** Infrastructure mediates significantly in improving the quality of learning. Schools and educational institutions must invest time and resources in training and professional development for teachers and principals in leadership, classroom management, and effective teaching methods. The overall quality of learning will improve when the principal can lead the school towards a clear vision of learning, and teachers have adequate skills and knowledge to plan, implement, and evaluate learning effectively.

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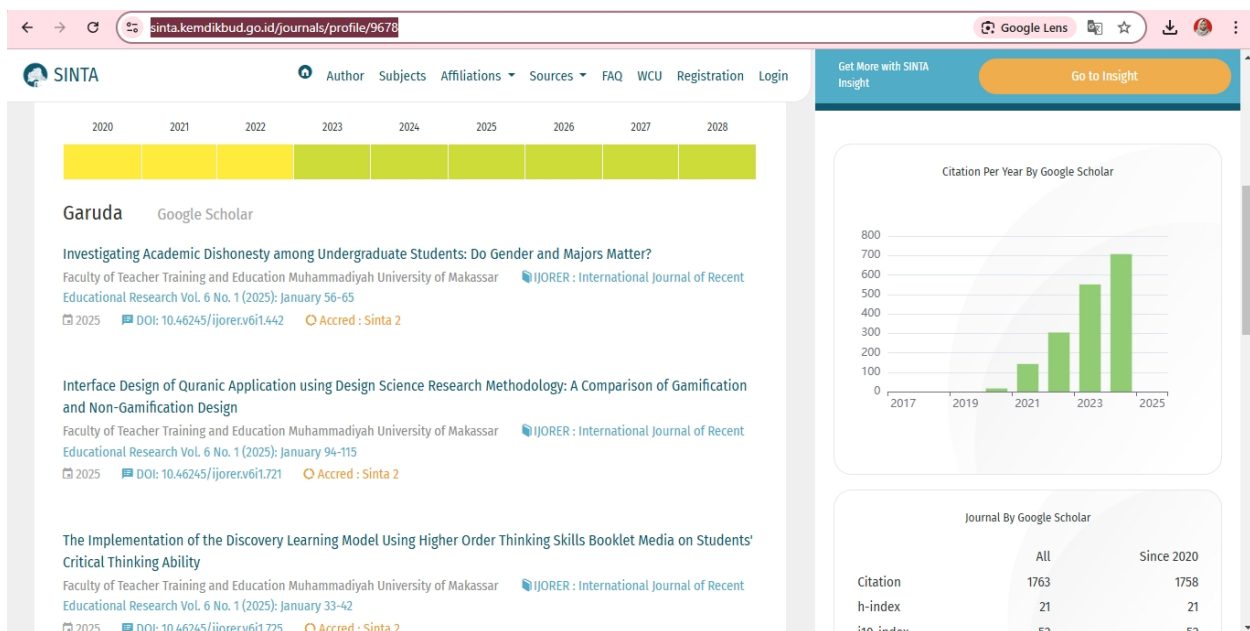
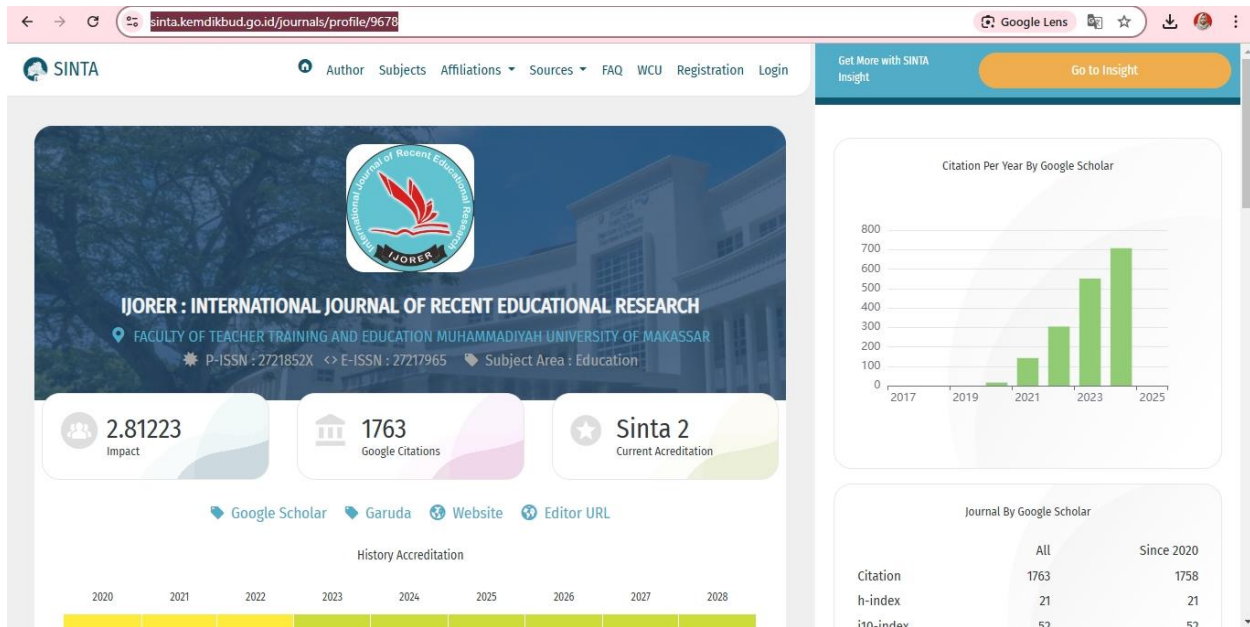
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