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The Influence of Digital Leadership of School Principals and Work Environment on Teacher Performance in Public Elementary Schools in Hulu Palik District, North Bengkulu

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Abstract: This study aims to analyze the influence of the principal's digital leadership and work environment on teacher performance in Public Elementary Schools in Hulu Palik District, North Bengkulu. The research method used is a quantitative approach with a causal associative design through multiple linear regression analysis, with a sample of 106 teachers selected using proportional simple random sampling techniques. The results showed that the principal's digital leadership had a positive and significant effect on teacher performance (β = 0.220; t = 3.720; sig. = 0.000), as well as the work environment which was proven to have a positive and significant effect (β = 0.394; t = 6.715; sig. = 0.000). Simultaneously, both variables had a significant effect with an F value of 76.479 (p = 0.000) and a coefficient of determination of 59.8%, which means that almost 60% of the variation in teacher performance was explained by these two factors. The novelty of this research lies in the integration of the concept of digital leadership with aspects of the work environment in the context of primary education, which have rarely been studied together before. The contribution of this research is to provide an empirical basis for strengthening school managerial strategies to improve teacher performance through strengthening digital leadership and creating a conducive work environment.

Keywords: Digital Leadership, Work Environment, Teacher Performance, North Bengkulu;

1. INTRODUCTION

Previous studies have confirmed that principal leadership, whether transformational, transactional, or digital, has a significant influence on improving teacher performance (Roesminingsih & Windasari, 2025). A conducive work environment—including infrastructure, organizational climate, and interpersonal relationships—has also been shown to encourage teachers to perform optimally (El Achi et al., 2025). Therefore, effective leadership and a supportive work environment are seen as important factors in improving the quality of basic education (Hsieh et al., 2024).

Although various studies have examined principal leadership and the work environment separately, there are still limited studies that simultaneously examine the role of principal digital leadership (Berkovich & Hassan, 2024), along with the work environment, on teacher performance in elementary school contexts, particularly in rural areas such as Hulu Palik District, North Bengkulu (Sariakin et al., 2025). There are also few studies that emphasize how the integration of digital aspects of leadership with work environment factors can jointly shape the quality of teacher performance (Pambudi et al., 2024)

Recent studies have shown that digital leadership is key in the era of educational transformation, as principals are not only required to master traditional management skills but also to be able to integrate technology into learning and school governance (Berkovich & Hassan, 2024). Meanwhile, other research emphasizes the importance of both the physical and psychological work environment in enhancing teacher morale and professionalism (Owhor, 2025). However, few studies have combined these two perspectives within an empirical framework in Indonesian elementary schools, making this research important in the educational administration literature (Widodo et al., 2022); (Owhor, 2025); (Hafiza Hamzah et al., 2021); (Hafiza Hamzah et al., 2021); (Christiana Obadimeji & Olasumbo Oredein, 2022); (Mukti et al., 2022); (Eni Candra Nurhayati, Bahtiar Efendi, 2022).

The novelty of this study lies in its attempt to integrate the principal's digital leadership variable with the work environment to explain teacher performance at elementary schools in Hulu Palik District, North Bengkulu (Karakose et al., 2021). Previous research has tended to focus on only one factor or ignore the context of digitalization in elementary schools (Spiteri & Chang Rundgren, 2020). Thus, this study provides a new perspective on the synergy between digital leadership and the work environment as a key determinant in improving teacher performance (Sunaryo et al., 2023).

Theoretically, this study expands the study of digital leadership by adding the work environment variable as a significant factor influencing teacher performance (Rasdiana et al., 2024). Practically, the results of this study are expected to serve as a reference for school principals in developing more adaptive digital leadership strategies, for school management in creating a conducive work environment, and for local governments in establishing policies for improving the quality of technology-based education (Ruloff &

Petko, 2025). Therefore, this research makes a positive contribution to the development of educational administration theory and practice (Akhmad, 2025).."

2. RESEARCH METHODS

This study employed a quantitative approach with a causal associative survey design. The design was chosen to examine the influence of independent variables—namely digital leadership of school principals (X1) and work environment (X2)—on the dependent variable, teacher performance (Y) (Delost & Nadder, 2014). This design allows for an objective measurement of the relationship among variables using standardized instruments and statistical analysis (Taherdoost, 2018).

Data Collection Methods

The population of this research consisted of all teachers from 10 public elementary schools (SDN) in Hulu Palik Subdistrict, North Bengkulu, totaling 124 teachers.

Table 3.1 Research population data

No.	School Name	Accreditation	Status	Number of Teachers
1	SD Negeri 156 Desa Taba Padang R	B	Active	11
2	SD Negeri 157 Desa Pematang Balam	B	Active	11
3	SD Negeri 158 Desa Air Baus 1	B	Active	13
4	SD Negeri 159 Desa Sumber Rejo	B	Active	16
5	SD Negeri 160 Desa Talang Rendah	B	Active	13
6	SD Negeri 161 Desa Kota Lekat	B	Active	14
7	SD Negeri 164 Desa Padang Bendar	B	Active	11
8	SD Negeri 165 Desa Baturoto	B	Active	11
9	SD Negeri 162 Desa Batu Raja R	C	Active	10
10	SD Negeri 163 Desa Batu Layang	C	Active	14
Total				**124**

Source: Elementary School Administration for all Hulu Palik District, North Bengkulu

Samples were determined using proportional simple random sampling, resulting in 106 respondents. The research instrument used was a Likert-scale questionnaire, which had been tested for validity and reliability. The instrument measured:

1. Digital leadership: visionary, change motivator, idea integration, and collaboration.
2. Work environment: physical conditions, organizational climate, interpersonal relationships, and psychological aspects.
3. Teacher performance: planning, implementation, and evaluation of learning.

Data Analysis Techniques

The collected data were analyzed using multiple linear regression analysis to test the effect of digital leadership and work environment on teacher performance. Supporting statistical tests included:

1. Validity and reliability tests (to ensure instrument accuracy).
2. Classical assumption tests, such as normality, linearity, and heteroscedasticity.

3. Hypothesis testing, including the t-test (partial effect), F-test (simultaneous effect), and coefficient of determination (R^2) to determine the percentage of influence contributed by the independent variables.

4. RESEARCH RESULTS

Data Description

Respondent Overview

The respondents to be studied were 106 principals and teachers of public elementary schools in Hulu Palik District, North Bengkulu. The purpose of these characteristics is to provide a description of the respondents' identities according to the sample determined by the author. These characteristics are categorized into tables based on age and gender. This is to facilitate the researcher and clarify the writing of the respondent characteristics.

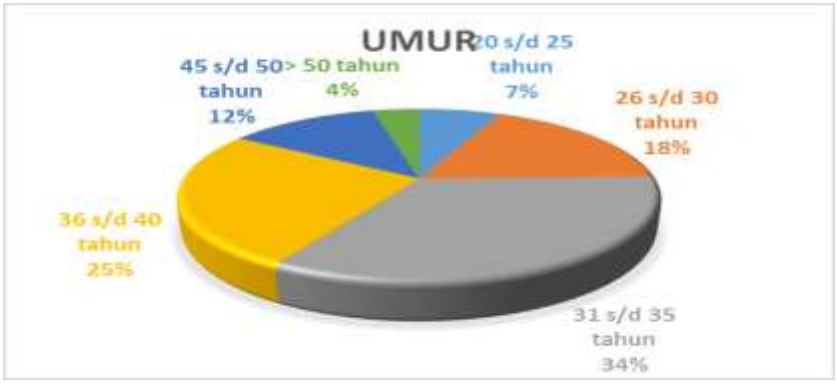


Figure 4.1.
Respondent Characteristics by Age

It is known that there were 106 respondents who filled out the questionnaire, of which 7 respondents (6.6%) were aged 20 to 25 years, 19 respondents (17.9%) were aged 26 to 30 years, 36 respondents (34%) were aged 31 to 35 years, 27 respondents (25.5%) were aged 36 to 40 years, 13 respondents (12.3%) were aged 45 to 50 years and 4 respondents (3.8%) were aged > 50 years. So that the production department of SD NEGERI throughout Hulu Palik District, North Bengkulu is dominated by 31 to 35 years of age, as many as 36 people or 34%.

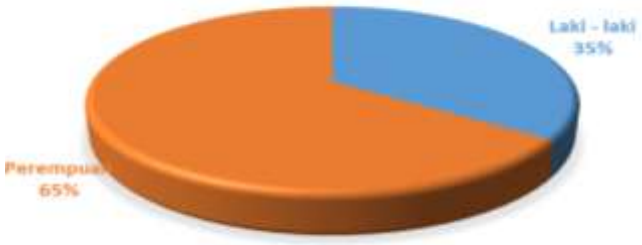


Figure 4.2
Characteristics of Respondents by Gender

It is known that there were 106 respondents who filled out the questionnaire, of which 37 respondents (34.9%) were male and 69 respondents (65.1%) were female. So that the production department of Public Elementary Schools in Hulu Palik District, North Bengkulu is dominated by women as many as 69 people or 65.1%.

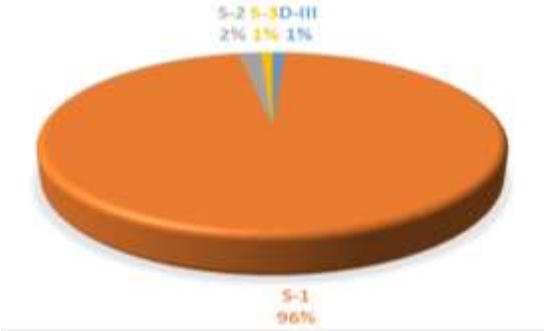


Figure 4.2
Characteristics of Respondents Based on Last Level of Education

It is known that there were 106 respondents who filled out the questionnaire, of which 1 respondent (0.9%) D-III, 102 respondents (96.2%) S-1, 2 respondents (1.9%) S-2 and 1 respondent (0.9%) Female. So that the production department of Public Elementary Schools in Hulu Palik District, North Bengkulu is dominated by women as many as 102 people or 96.2%.

Validity Test

1. The results of the validity test calculations show that r count > r table except for no. 27. Therefore, the Digital Leadership variable (X1) used in the study is declared valid.
2. The results of the validity test calculations show that r count > r table. Therefore, the Work Environment variable (X2) used in the study is declared valid.
3. The results of the validity test calculations show that r count > r table. Therefore, the Teacher Performance variable (Y) used in the study is declared valid.

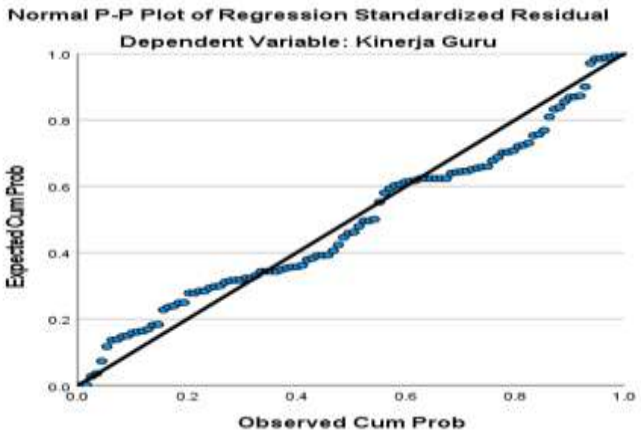
Reliability Test

Table 4.10
Reliability Test Results

Variable	Cronbach Alpha	Standard	Information
Digital Leadership (X1)	0,756	0,60	Reliable
Work environment (X2)	0,756	0,60	Reliable
Teacher Performance (Y)	0,760	0,60	Reliable

The data in Table 4.10 shows that the Cronbach's Alpha value for each variable is above the required value (>0.6). Therefore, it is said that the question construct, which is the variable of Digital Leadership and Work Environment on Teacher Performance, is reliable.

Normality Test

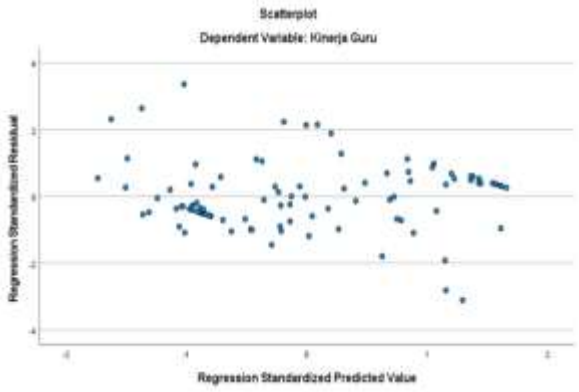


Based on the image above, the normal probability plot above can be seen that the image shows a good pattern and the data is spread around the diagonal line and follows the direction of the diagonal line, so the normal probability plot graph is normally distributed.

Linearity Test

1. Based on the results of the tests conducted, it shows that the relationship between Digital Leadership (X) and Teacher Performance (Y) is linear, namely the F test value for deviation from linearity is 1.619, with a significance value of 0.042 (p <0.05). Therefore, the two variables are linearly correlated.
2. Based on the results of the tests that have been conducted, it shows that the relationship between the Work Environment (X) and Teacher Performance (Y) is linear, namely the F test value for deviation from linearity is 1.254, with a significance value of 0.207 (p>0.05). Therefore, the two variables are not linearly correlated.

Uji Heteroskedastisitas



Based on the results of the scatterplot in the image, it can be seen that the points do not form a clear pattern and the points are spread above and below the number 0 on the Y axis, so it can be concluded that there is no heteroscedasticity.

The findings of this study are presented in three parts: the influence of digital leadership on teacher performance, the impact of the work environment on teacher performance, and the comparison of both factors simultaneously.

Summary of Regression Analysis Results

Variable Tested	Regression Coefficient (β)	t-value	Sig. (p)	Significance
Digital Leadership → Teacher Performance	0.220	3.720	0.000	Significant
Work Environment → Teacher Performance	0.394	6.715	0.000	Significant
Digital Leadership + Work Environment (Simultaneous) → Teacher Performance	R^2 = 0.598, F = 76.479	–	0.000	Significant

Analysis of the Influence of Digital Leadership on Teacher Performance

Table 4.14
Simple Linear Regression Analysis of Digital Leadership Variables.

Coefficients[a]					
Model	*Unstandardized Coefficients*		*Standardized Coefficients*	*T*	*Sig.*
	B	Std. Error	Beta		
s(Constant)	25.091	8.761		2.864	.005
Digital Leadership	.220	.059	.302	3.720	.000

a. Dependent Variable: Teacher Performance

Source: Results of data processing using SPSS version 28.00

Based on SPSS testing, the results of the test on the Effect of Digital Leadership on Teacher Performance at Elementary Schools in Hulu Palik District, North Bengkulu, showed a t-value of 3.720 > t-table 1.662 with a significance value of 0.000. This significance value is greater than 0.05. Based on the following provisions:

If the significance level is ≤ 5%, Ho is rejected and Ha is accepted.

If the significance level is ≥ 5%, Ho is accepted and Ha is rejected.

This indicates that there is an effect of Digital Leadership on Teacher Performance at Elementary Schools in Hulu Palik District, North Bengkulu. This means that Ho1 is rejected or Ha1 is accepted.

Leadership is closely linked to a person's power or ability to contribute to the advancement of an organization. This ability indirectly influences and impacts the organization, demonstrating that the leader can effectively mobilize, direct, and coordinate various instruments or departments within the organization to improve its performance. Furthermore, the leader's role also influences his or her followers. Therefore, effective leadership practices are essential for achieving better organizational performance. Effective leadership contributes to the organization's progress. Organizational progress supports performance and the achievement of its goals.

The results of this study are in line with the research of (Mukti et al., 2022); and (Eni Candra Nurhayati, Bahtiar Efendi, 2022), which stated that there is an influence of Digital Leadership on teacher performance. This is different from research conducted by previous researchers, namely, Depany & Prasojo, (2025), which stated that there is a negative and significant influence of Digital Leadership on teacher performance. Based on several research results above, it shows that as a leader, the principal has the task of mobilizing all existing resources in the school so that they can be empowered to be used optimally to achieve predetermined goals. Good or bad teacher performance in schools depends greatly on how the principal's ability to influence teacher behavior in carrying out their duties.

Analysis of the Impact of the Work Environment on Teacher Performance

Table 4.15
Simple Linear Regression Analysis of Work Environment Variables

Coefficients[a]					
Model	*Unstandardized Coefficients*		*Standardized Coefficients*	*T*	*Sig.*
	B	Std. Error	Beta		
1 *(Constant)*	25.091	8.761		2.864	.005
Work environment	.394	.059	.545	6.715	.000

a. Dependent Variable: Teacher Performance

Source: Results of data processing using SPSS version 28.00

Based on SPSS testing, the results of the test on the Influence of the Work Environment on Teacher Performance at Elementary Schools in Hulu Palik District, North Bengkulu, showed a t-value of 6.715 > t-table 1.662, with a significance level of 0.000. This significance value is less than 0.05. Based on the following criteria:

If the significance level is ≤ 5%, Ho is rejected and Ha is accepted.

If the significance level is ≥ 5%, Ho is accepted and Ha is rejected.

This indicates that the Work Environment influences Teacher Performance at Elementary Schools in Hulu Palik District, North Bengkulu. This means that Ho2 is rejected, or Ha2 is accepted.

This proves that the work environment influences teacher performance. A positive work environment that supports teacher performance will create a sense of security and comfort for employees within an organization. A positive work environment also helps teachers feel at home and loyal to the company, significantly

benefiting the company in reducing costs related to human resources. The relationship between the work environment and goal setting theory is that if teachers are in a comfortable and safe work environment to carry out their work, it will improve teacher and employee performance.

The results of this study align with those of (Sudarti, 2022) and (Mukti et al., 2022), who stated that the work environment influences teacher performance. This means that a better work environment will significantly improve teacher performance. This contrasts with previous research conducted by (Eni Candra Nurhayati, Bahtiar Efendi, 2022), which found no significant positive influence from the work environment on teacher performance.

The Influence of Digital Leadership and Work Environment on Teacher Performance

Table 4.20
F Test (Simultaneous)

ANOVA[a]						
Model		*Sum of Squares*	*Df*	*Mean Square*	*F*	*Sig.*
1	*Regression*	9487.842	2	4743.921	76.479	.000[b]
	Residual	6388.998	103	62.029		
	Total	15876.840	105			

a. Dependent Variable: Teacher Performance

b. Predictors: (Constant), Work Environment, Digital Leadership

Sumber : *Hasil olah data melalui SPSS versi 28.00*

Simultaneous testing of the variables Digital Leadership (X1) and Work Environment (X2) on Teacher Performance (Y) at elementary schools in Hulu Palik District, North Bengkulu, showed a calculated F value of 76.479 > F table 2.69 with a significance value of 0.000, which is less than 0.05. Based on the following provisions:

If the significance level is ≤ 5%, Ho is rejected and Ha is accepted.

If the significance level is ≥ 5%, Ho is accepted and Ha is rejected.

This means that simultaneously, it can be concluded that the variables Digital Leadership and Work Environment have a significant effect on Teacher Performance.

With an R Square value of 0.598 or 59.8% influenced by Digital Leadership and Work Environment, it shows that Digital Leadership and Work Environment influence Teacher Performance, while the remaining 41.2% are other variables not examined by this study. Meanwhile, other factors that influence teacher performance in this study were not analyzed.

Good Digital Leadership will encourage and motivate teachers in carrying out teaching and learning activities so that teachers are better able to improve their abilities in processing teaching and learning activities to be more interesting and optimal and able to achieve the desired learning objectives, likewise the creation of a conducive work environment in schools can occur if a good and harmonious relationship is established between the principal and teachers, teachers with teachers, and teachers with students. Teachers need to have appropriate competency standards, teachers with adequate

competencies and high performance will directly influence the learning process in the classroom. The success of a teacher's performance is reflected in the learning outcomes obtained by students. With the smooth implementation of learning activities, the teacher's performance will indirectly be carried out well. These results are in line with research conducted by Mukti et al., (2022) and Eni Candra Nurhayati, Bahtiar Efendi, (2022) that Digital Leadership and the work environment influence teacher performance.

Comparison of the Two Factors on Teacher Performance.

Simultaneous testing using the F-test revealed that digital leadership and the work environment together significantly influence teacher performance. The obtained **F-value was 76.479** (greater than F-table 2.69) with a significance level of 0.000. Furthermore, the coefficient of determination (**R^2**) was **0.598**, meaning that both variables explained **59.8% of the variance in teacher performance**, while the remaining 40.2% was explained by other factors not included in this study.

Discussion

Implications of the Findings for School Leaders

The results of the study indicate that the principal's digital leadership has a positive and significant impact on teacher performance. This confirms that principals in the digital era play a role not only as administrators but also as agents of change capable of facilitating the use of technology in learning. With visionary digital leadership, teachers are more motivated to innovate, improve pedagogical skills, and adapt to the needs of 21st-century learning. These findings imply that principals need to position themselves as digital leaders capable of providing inspiration, guidance, and support in the process of integrating educational technology.

Recommendations for Improving Digital Leadership in Schools

Based on the research findings, strengthening the digital competency of school principals is crucial. Recommendations include:

1. Conducting ongoing training on digital leadership, through workshops, seminars, and professional development programs.
2. Encouraging school principals to develop a strategic vision aligned with the digital transformation of education.
3. Facilitating collaboration between principals, teachers, and other stakeholders in utilizing technology for learning.
4. Integrating the use of digital technology not only in learning but also in school management, such as academic supervision, administration, and internal communications.

Suggestions for Creating a Positive Work Environment for Teachers

The work environment has been proven to significantly influence teacher performance. Adequate physical school conditions, a healthy organizational climate, and psychological and social support can increase teacher motivation. Therefore, some recommendations that can be implemented are:

1. Improve school facilities and infrastructure, including internet access, comfortable classrooms, and other supporting facilities.
2. Build an open, collaborative organizational climate that supports teacher professional development.
3. Pay attention to teacher psychological well-being through policies that reduce excessive workloads and increase job security and satisfaction.
4. Strengthen interpersonal relationships between teachers, principals, students, and the surrounding community to create a harmonious work environment.

CONCLUSION

Summary of Key Findings

This study revealed that both digital leadership of school principals and the work environment significantly affect teacher performance in elementary schools in Hulu Palik District, North Bengkulu. Digital leadership, reflected in visionary practices, the ability to drive change, and technology integration, had a positive and significant impact on teacher performance. Likewise, a supportive work environment-covering physical conditions, organizational climate, interpersonal relationships, and psychological aspects-also contributed significantly to teacher performance. When examined simultaneously, these two variables explained 59.8% of the variance in teacher performance, indicating their substantial role in shaping teaching quality in the digital era.

Limitations of the Study

This study was limited in several ways. First, it was conducted only in one district (Hulu Palik) and thus the results cannot be generalized to all educational contexts in Indonesia. Second, the study focused only on two independent variables—digital leadership and work environment while other potential determinants of teacher performance, such as motivation, professional development, or supervision, were not included. Third, the use of a cross-sectional survey design restricted the ability to capture long-term dynamics of leadership practices and workplace conditions.

Suggestions for Future Research

Future studies are encouraged to expand the scope of research to different districts or provinces to allow broader generalization. Additional variables such as teacher motivation, academic supervision, the use of digital learning platforms, and government policy support could be integrated to provide a more comprehensive understanding of factors influencing teacher performance. Longitudinal or mixed-method research designs would also be valuable in exploring the causal mechanisms and deeper insights into how digital leadership and work environment interact over time to shape teacher effectiveness.

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Attachment

1. *https://drive.google.com/file/d/1GiZIueJwBWMO2BVMzwOnrnx3EUneasPU/view?usp=sharing*