Volume 6 Number 2 (2026)
July-December 2026
Page: 191-205

E-ISSN: 2797-0965
P-ISSN: 2809-9710
DOI: 10.37680/basica.v6i2.10480

BASICA Journal of Primary Education

The Influence of Academic Supervision, Managerial Supervision, and School Supervisor Leadership on Public Elementary School Teacher Performance

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Submitted: 12/01/2025 Revised: 21/10/2026 Accepted: 20/10/2026 Published: 24/10/2026

Abstract

This study examines the predictive relationships of academic supervision, managerial supervision, and school supervisor leadership with public elementary school teacher performance in Wanasari, Brebes. A quantitative, non-experimental cross-sectional survey involved 83 teachers selected from a population of 490 through proportional random sampling across eight school supervision clusters. Four 20-item instruments used a four-point Likert scale. Pilot testing with 30 teachers outside the main sample showed that all 80 items were valid (r = 0.554-0.911; r critical = 0.361) and reliable (Cronbach's alpha = 0.893-0.969). Multiple linear regression indicated that academic supervision (B = -0.034; beta = -0.016; p = 0.878) and managerial supervision (B = -0.161; beta = -0.090; p = 0.398) were not significant independent predictors. School supervisor leadership was a positive significant predictor (B = 0.394; beta = 0.346; p = 0.002) and had the largest standardized coefficient in the model. The overall regression was significant, F(3,79) = 3.714, p = 0.015, and explained 12.4% of the variance in teacher performance (R2 = 0.124; adjusted R2 = 0.090). A Glejser test indicated heteroscedasticity for school supervisor leadership (p = 0.019), so coefficient-based inference should be interpreted cautiously. The findings support strengthening the measured leadership practices of directing, guiding, motivating, and controlling while retaining academic and managerial supervision as professional support functions.

Keywords

Academic Supervision; Managerial Supervision; School Supervisor Leadership; Teacher Performance; Elementary Education

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INTRODUCTION

Teacher performance is central to learning quality because it is expressed through planning, classroom practice, assessment, professional development, and accountable work behavior. In elementary schools, these responsibilities connect educational policy with students' daily learning experiences. Professional competence alone does not automatically produce strong performance; teachers also work within systems of guidance, organizational support, and leadership. Sulastri et al., (2020) similarly position teacher professionalism as a core element in educational quality improvement.

The local problem in this study was defined from evidence that directly relates to teaching practice rather than from school participation rates. Preliminary supervision records from 55 teachers in Wanasari during 10-20 September 2025 showed that only 16 teachers (29%) prepared instructional plans adequately before teaching, while 11 teachers experienced difficulties involving learning resources, conventional lecture use, time management, or follow-up after assessment. The 2025 Education Report Card for seven public elementary schools in School Supervision Cluster 3 also showed variation in learning quality, ranging from 54.52% at SDN Pebatan 02 to 74.27% at SDN Pebatan 03. These data do not constitute direct causal evidence about supervisors, but they establish a relevant performance context for examining how teachers perceive supervisory practices and leadership in Wanasari (Direktorat Jenderal Guru dan Tenaga Kependidikan, 2023).

Academic supervision is professional assistance intended to improve teachers' capacity to plan, conduct, assess, and refine instruction. A developmental view of supervision emphasizes diagnosis, dialogue, observation, feedback, and follow-up that are adapted to teachers' needs (Glickman et al., 2018). Under this framework, academic supervision is theoretically related to teacher performance because it addresses instructional work directly. Evidence from elementary schools has shown that academic supervision can be associated with teacher performance, although the magnitude and significance vary across contexts and models (Sukamto et al., 2023).

Managerial supervision concerns the organizational conditions that enable teaching, including school planning, curriculum management, standards monitoring, administration, facilities, work culture, and institutional follow-up. In Indonesia's current supervisory framework, school supervisors are expected to support school improvement through data-informed assistance rather than act only as compliance inspectors (Direktorat Jenderal Guru dan Tenaga Kependidikan, 2023). This function may be relevant to teacher performance because organizational arrangements shape the resources, coordination, and work environment within which teachers perform their

duties. Program evaluation research also demonstrates that human-resource strengthening depends on the quality of planning, implementation, and organizational follow-up (Wiryatmo et al., 2023).

School supervisor leadership is conceptually distinct from the two technical supervision functions. In this study, it refers specifically to the supervisor's behavior in directing, guiding, motivating, and controlling professional work. These dimensions follow the general management and leadership functions described by (Terry & Rue, 2023). The construct measured here is school supervisor leadership, not principal leadership and not transformational leadership. This distinction is important because evidence about principal leadership cannot be treated as evidence about the identical role of external school supervisors, even though leadership research provides relevant conceptual comparisons. Polatcan et al., (2021), for example, showed that school leadership was related to teacher agency through teacher self-efficacy, but their construct and institutional actor differ from those examined in the present study.

Recent empirical studies reinforce the need to distinguish supervision and leadership constructs. Muntahanah, (2023) reported relationships between school-level supervision, learning quality, and teacher performance. Hamka, (2023) highlighted the role of principal leadership in improving teacher performance in a suburban setting. Rasdiana et al., (2024) found that instructional e-supervision and technology leadership had different direct and indirect coefficients in explaining teachers' professional digital competence. These studies indicate that supervision and leadership may contribute through different pathways; they do not establish that the three constructs operate synergistically in every context.

Within the literature reviewed for this study, recent evidence remains limited on a single regression model that jointly examines supervisor-led academic supervision, supervisor-led managerial supervision, and school supervisor leadership in relation to public elementary school teacher performance. Previous studies more commonly examine principal supervision, principal leadership, technological leadership, or selected combinations of supervisory variables. The present study addresses that limited evidence by testing the three supervisor-related predictors within the same population. Its contribution is therefore empirical and context-bounded: it compares their standardized predictive coefficients and their collective explanatory power among public elementary school teachers in Wanasari.

Wanasari is a relevant context because its 56 public elementary schools are organized into eight school supervision clusters with unequal teacher populations, allowing the supervisory system

to be examined across distinct operational strata. The study aims to test whether academic supervision, managerial supervision, and school supervisor leadership are individually associated with teacher performance and whether the three variables collectively explain a significant proportion of performance variation. Because the design is cross-sectional and non-experimental, the results are interpreted as predictive associations and do not establish temporal or causal mechanisms.

METHOD

Research Design and Participants

The study used a quantitative, non-experimental cross-sectional survey with multiple linear regression. The research was conducted in 56 public elementary schools in Wanasari District, Brebes Regency, during the 2025/2026 academic year. The target population comprised 490 civil-service and non-civil-service teachers. The sample size was calculated with the Slovin formula at a 10% margin of error, resulting in 83 respondents. This margin limits the precision of population estimates and is acknowledged when interpreting generalizability (Sugiyono, 2025).

Proportional random sampling was applied across eight school supervision clusters, locally termed sekolah binaan (Sekbin). A cluster is an operational group of schools assigned for supervisory coordination; it is not a separate administrative district. Sample allocation followed each cluster's share of the 490-teacher population, after which respondents were selected randomly within each cluster. The final allocation was 8, 10, 9, 11, 9, 11, 13, and 12 teachers from Clusters 1 through 8, respectively.

The sample consisted of 55 women (66.27%) and 28 men (33.73%). Most respondents were aged 30-45 years (49.40%), held a bachelor's degree (91.57%), and had 5-15 years of service (45.78%). These characteristics describe the achieved sample and were not entered as covariates in the regression model. Therefore, the statistical conclusions are limited to the specified predictor model and the sampled teacher population.

Table 1. Proportional sample allocation across school supervision clusters

Cluster	Population	Sample	Sample (%)
1	49	8	9.64
2	60	10	12.05
3	54	9	10.84

Cluster	Population	Sample	Sample (%)
4	64	11	13.25
5	53	9	10.84
6	66	11	13.25
7	74	13	15.66
8	70	12	14.46
Total	490	83	100.00

Source: Wanasari teacher population and sampling records, processed by the researcher (2026).

Measures and Data Collection

Primary data were collected through four closed questionnaires, each containing 20 statements rated on a four-point Likert scale. Teachers rated academic supervision, managerial supervision, and supervisor leadership from strongly disagree to strongly agree, while teacher performance used frequency responses from never to always. The use of four response categories was intended to require a directional response and to avoid a neutral midpoint.

The indicators were derived from the thesis's theoretical and regulatory framework. Academic supervision covered learning planning, implementation, assessment, feedback, and follow-up in line with developmental instructional supervision (Glickman et al., 2018). Managerial supervision covered annual planning and budgeting, curriculum, national standards, school performance, administration, work culture, and discipline, consistent with Indonesia's operational supervisor competency model (Putra, 2023). School supervisor leadership measured directing, guiding, motivating, and controlling, based on (Terry & Rue, 2023). Teacher performance measured core instructional duties, classroom practice, competency development, and public-service work behavior, consistent with the national teacher competency orientation (Direktorat Jenderal Guru dan Tenaga Kependidikan, 2023).

The instruments were pilot-tested with 30 teachers outside the main sample but with comparable characteristics. Item validity used Pearson product-moment correlations. With df = 28 and a two-tailed 5% significance level, the critical coefficient was 0.361; items were retained when r calculated exceeded 0.361. Internal consistency used Cronbach's alpha with a minimum criterion of 0.60 (Siregar, 2020). Contrary to the earlier reviewed manuscript, the final thesis output shows that all 20 teacher-performance items were valid; no invalid item was reused, revised without retesting, or excluded from the final instrument.

The researcher also conducted non-participant observation by reviewing available teaching

videos and school-supervisor documentation. Observation was used only to contextualize questionnaire findings concerning lesson preparation, classroom practice, and supervisory follow-up. It was not treated as a statistical validation of the questionnaire and was not included in the regression analysis. Secondary documentation included school profiles, teaching assignments, the 2025 Education Report Card, and teacher performance records.

Table 2. Measurement framework and pilot-test quality

Variable	Measured dimensions	Items	Validity r range	Cronbach's alpha
Academic supervision (X1)	Planning; instruction; assessment; feedback and follow-up	20	0.549-0.902	0.958
Managerial supervision (X2)	Planning/budgeting; curriculum; standards; school performance; administration; work culture	20	0.637-0.873	0.964
School supervisor leadership (X3)	Directing; guiding; motivating; controlling	20	0.702-0.894	0.969
Teacher performance (Y)	Core duties; instructional practice; competency development; work behavior	20	0.554-0.779	0.893

Source: SPSS 27 output, processed by the researcher (2026).

Data Analysis

Data were processed using SPSS 27. Descriptive analysis summarized respondent characteristics. Regression assumptions were evaluated before hypothesis testing. Residual normality was accepted when the Kolmogorov-Smirnov p-value exceeded 0.05. Linearity was accepted when Deviation from Linearity exceeded 0.05. Multicollinearity was considered absent when tolerance exceeded 0.10 and VIF was below 10. The Glejser test assessed heteroscedasticity; a predictor p-value below 0.05 indicated non-constant residual variance.

Multiple linear regression estimated $Y = a + b1X1 + b2X2 + b3X3 + e$. Partial coefficients were evaluated with t tests at alpha = 0.05. The standardized beta coefficients were compared to describe relative predictor strength within this model. The F test evaluated whether the three predictors collectively improved model fit, while R2 represented the proportion of teacher-performance variance jointly explained by all predictors. Neither a significant F test nor a large standardized beta was interpreted as proof of interaction, mediation, or causality.

FINDINGS AND DISCUSSION

Findings

Instrument Quality and Regression Diagnostics

All 80 questionnaire items exceeded the critical validity coefficient of 0.361, and all four scales exceeded the minimum reliability criterion. The corrected final instrument therefore contained 20 items for each variable. Regression diagnostics are summarized in Table 3.

Table 3. Regression diagnostic results

Diagnostic	Variable	Statistic	Criterion	Interpretation
Residual normality	Model residual	K-S p = 0.200	p > 0.05	Met
Linearity	X1-Y	Deviation p = 0.792	p > 0.05	Met
Linearity	X2-Y	Deviation p = 0.499	p > 0.05	Met
Linearity	X3-Y	Deviation p = 0.054	p > 0.05	Met, narrowly
Multicollinearity	X1	Tolerance 0.998; VIF 1.002	Tol. > 0.10; VIF < 10	Absent
Multicollinearity	X2	Tolerance 0.992; VIF 1.008	Tol. > 0.10; VIF < 10	Absent
Multicollinearity	X3	Tolerance 0.992; VIF 1.008	Tol. > 0.10; VIF < 10	Absent
Glejser test	X1	p = 0.692	p > 0.05	No indication
Glejser test	X2	p = 0.107	p > 0.05	No indication
Glejser test	X3	p = 0.019	p > 0.05	Heteroscedasticity indicated

Source: SPSS 27 output, processed by the researcher (2026).

The residuals met the normality criterion, all bivariate relationships met the stated linearity criterion, and the predictors showed no multicollinearity. However, the original SPSS Glejser output reported p = 0.019 for school supervisor leadership, not 0.190 as stated in the earlier narrative. This result indicates heteroscedasticity associated with X3. The regression coefficients are reported as specified in the thesis, but conventional standard errors and p-values should be interpreted cautiously because the constant-variance assumption was not fully met.

Partial Regression Results

The estimated equation was Y = 61.134 - 0.034X1 - 0.161X2 + 0.394X3. Table 4 reports both unstandardized and standardized coefficients so that significance and relative predictor strength are not conflated.

Table 4. Multiple linear regression coefficients

Predictor	B	SE	Standardized beta	t	p	Decision
Academic supervision (X1)	-0.034	0.222	-0.016	-0.154	0.878	Not significant
Managerial supervision (X2)	-0.161	0.189	-0.090	-0.850	0.398	Not significant
School supervisor leadership (X3)	0.394	0.120	0.346	3.275	0.002	Positive; significant

Source: SPSS 27 output, processed by the researcher (2026).

Academic supervision was not a significant independent predictor of teacher performance after the other variables were controlled, B = -0.034, beta = -0.016, t = -0.154, p = 0.878. H1 was therefore not supported. The near-zero standardized coefficient indicates little unique linear predictive contribution in this model; it does not demonstrate that academic supervision is ineffective in general.

Managerial supervision was also not a significant independent predictor, B = -0.161, beta = -0.090, t = -0.850, p = 0.398. H2 was not supported. The result concerns a direct coefficient in this model only. Because no mediator was measured and no mediation analysis was performed, the finding cannot establish an indirect effect through principal leadership, budget management, facilities, or another organizational mechanism.

School supervisor leadership was a positive significant predictor, B = 0.394, beta = 0.346, t = 3.275, p = 0.002. H3 was supported. Its absolute standardized beta was larger than those of academic supervision and managerial supervision, making it the strongest standardized predictor among the three variables included in this model. This relative comparison does not make leadership a universal or causal determinant, and the heteroscedasticity result requires caution.

Overall Model and Explained Variance

Table 5. Overall regression test

Source	Sum of squares	df	Mean square	F	p
Regression	358.021	3	119.340	3.714	0.015
Residual	2538.268	79	32.130		
Total	2896.289	82			

Source: SPSS 27 output, processed by the researcher (2026).

The overall regression was significant, F(3,79) = 3.714, p = 0.015, supporting H4 at alpha = 0.05.

This test indicates that the predictor set collectively improved prediction of teacher performance relative to an intercept-only model. It does not test whether the predictors interact or produce a synergistic effect.

Table 6. Model summary and coefficient of determination

R	R2	Adjusted R2	Standard Error of Estimate	Interpretation
0.352	0.124	0.090	5.668	The three predictors jointly explain 12.4% of teacher-performance variance

Source: SPSS 27 output, processed by the researcher (2026).

R2 = 0.124 means that academic supervision, managerial supervision, and school supervisor leadership jointly explained 12.4% of observed teacher-performance variance. Adjusted R2 was 0.090. No qualitative label such as low, moderate, or strong is assigned without an explicit disciplinary benchmark. The remaining 87.6% is unexplained by this model; it should not be attributed to specific variables without additional measurement and testing.

Discussion

Academic Supervision and Teacher Performance

The nonsignificant coefficient for academic supervision does not support the expected positive independent relationship in this sample. Developmental supervision theory proposes that professional assistance can improve instructional planning, observation, feedback, and follow-up (Glickman et al., 2018). The present finding neither confirms nor disproves that general proposition; it shows only that teachers' academic-supervision scores did not explain unique variance in self-reported performance after managerial supervision and supervisor leadership were controlled.

This result differs from Sukamto et al. (2023), who reported a significant relationship involving academic supervision in an elementary-school model that also included principal leadership and achievement motivation. The difference should be read as a contextual and model difference, not as evidence that one study is universally correct. The current research measured school-supervisor practices, used a different population, and included a different predictor set.

The thesis contains preliminary observations about lesson planning and classroom challenges, but these supporting data did not measure implementation fidelity, supervisor workload, visit frequency, or bureaucratic fatigue. Therefore, those factors cannot be used as verified explanations for the nonsignificant coefficient. Future research could measure the completeness and frequency of the supervision cycle directly, which would allow the theoretical mechanism to be

tested rather than inferred.

Managerial Supervision and Teacher Performance

Managerial supervision also showed no significant independent coefficient. This result suggests that teacher perceptions of school planning, standards monitoring, administration, facilities, work culture, and discipline did not explain unique performance variance after the other predictors were controlled. It does not prove that managerial supervision has an indirect effect, because the study did not measure a mediator or estimate an indirect pathway.

Managerial supervision operates at an organizational level and may be conceptually more distal from daily classroom behavior than academic supervision. Indonesia's current policy framework positions supervisors as partners who assist school improvement and data-informed planning (Direktorat Jenderal Guru dan Tenaga Kependidikan, 2023). Nevertheless, conceptual distance is not an empirical mediation result. A future design could test whether principal leadership, organizational climate, resource adequacy, or follow-up quality transmits any relationship between managerial supervision and teacher performance.

The absence of a significant direct coefficient also differs from studies that link supervision or school management with teacher performance. Muntahanah (2023) found that school-level supervision was related to learning quality and teacher performance, but the supervisory actor and model were not identical to those in Wanasari. Such differences reinforce the need to identify who performs supervision, what indicators are measured, and which organizational level is being analyzed.

School Supervisor Leadership and Teacher Performance

School supervisor leadership was the only significant independent predictor and had the largest absolute standardized beta (0.346). This supports a positive predictive relationship between the measured practices of directing, guiding, motivating, and controlling and teacher performance. The result is consistent with the general leadership premise that coordinated direction and motivation can influence organizational behavior (Terry & Rue, 2023). It does not establish that the construct was transformational leadership, because transformational leadership was not the operationalized variable.

Related leadership studies provide useful comparisons but should not be treated as construct equivalence. Hamka (2023) reported that principals contributed to teacher performance improvement in a suburban school. Polatcan et al. (2021) found that transformational school

leadership related to teacher agency through self-efficacy. The present study extends the conversation to external school supervisors, yet it does not replicate either principal-leadership construct or mediation pathway.

The standardized-beta comparison directly addresses the reviewer's concern about dominance. X3 had the strongest coefficient within this three-predictor model, while X1 and X2 had small negative standardized coefficients. The wording "within this model" is essential: beta coefficients depend on measurement, sample, included predictors, and model assumptions. Moreover, the Glejser p-value for X3 indicates that conventional inference may be sensitive to non-constant residual variance.

Collective Prediction and Explained Variance

The significant F test indicates that the three predictors collectively contributed to prediction of teacher performance. It does not establish synergy, complementarity, or interaction. An interaction claim would require product terms or another explicit interaction model. The present result is therefore described as a significant overall regression, not as a synergistic supervisory system.

The model explained 12.4% of teacher-performance variance. This proportion is reported without a qualitative category because no criterion was specified in advance. The unexplained 87.6% indicates that substantial variation remains outside the model; it does not prove that any named factor accounts for that remainder. Workload and work intensification are plausible subjects for later testing because they are associated with teachers' work capacity in prior synthesis research (Creagh et al., 2025). Competence, discipline, and motivation are also empirically relevant possibilities, but they require direct measurement in the Wanasari population (Catio & Sunarsi, 2020).

Rasdiana et al., (2024) demonstrated that supervision, leadership, and school culture can have different direct and indirect coefficients in a technology-focused structural model. That study supports the value of testing differentiated pathways, but it does not validate synergy in the present regression. Future Wanasari research may therefore compare direct, mediated, and interaction models using constructs selected in advance and data suitable for robust estimation.

Theoretical and Practical Implications

The theoretical contribution is deliberately limited. The study shows that three supervisor-related dimensions had different statistical patterns in one district: school supervisor leadership was a significant positive predictor, academic and managerial supervision were not significant

independent predictors, and the predictor set was collectively significant. These findings refine local empirical understanding of supervisory functions; they do not prove that the dimensions form a synergistic system or that leadership is the primary determinant of teacher performance.

Practically, the results support professional development focused on the leadership behaviors actually measured: communicating direction, guiding teachers, motivating professional improvement, and controlling or monitoring follow-up in a fair manner. The recommendation does not require replacing academic or managerial supervision. Instead, technical supervision should be retained, documented, and evaluated for quality while leadership development is strengthened. The national supervisor competency framework provides an appropriate policy reference for aligning these practices (Direktorat Jenderal Guru dan Tenaga Kependidikan, 2023).

The findings should not be translated directly into claims about student literacy or numeracy improvement because student outcomes were not modeled as dependent variables. The Education Report Card served as contextual evidence and documentation, not as an outcome in the regression. Practical use of the results should therefore remain focused on supervisory practice and teacher performance.

Limitations

The study has five principal limitations. First, the cross-sectional non-experimental design cannot establish temporal order or causality. Second, the main variables were measured through teacher self-report, creating possible common-method and social-desirability bias. Third, the 83-teacher sample was drawn from one district with a 10% margin of error, limiting precision and external generalization. Fourth, supporting observations were not incorporated as an independently coded analytical dataset. Fifth, the Glejser test indicated heteroscedasticity for X3, while the available thesis materials did not include raw data needed to recompute heteroscedasticity-robust standard errors. Replication should retain proportional sampling, collect the raw item-level dataset, use robust or bootstrapped inference, and test any proposed mediation or interaction explicitly.

CONCLUSION

This study examined the predictive relationships of academic supervision, managerial supervision, and school supervisor leadership with public elementary school teacher performance in Wanasari, Brebes. Academic supervision (B = -0.034; beta = -0.016; p = 0.878) and managerial supervision (B = -0.161; beta = -0.090; p = 0.398) were not significant independent predictors. School

supervisor leadership was a positive significant predictor (B = 0.394; beta = 0.346; p = 0.002) and had the largest standardized coefficient among the variables included. The overall model was significant, F(3,79) = 3.714, p = 0.015, and jointly explained 12.4% of teacher-performance variance (R2 = 0.124; adjusted R2 = 0.090).

These results support strengthening school supervisors' capacity to direct, guide, motivate, and monitor professional work while maintaining academic and managerial supervision as technical support functions. The findings do not demonstrate causal influence, mediation, interaction, synergy, transformational leadership, clinical supervision, or administrative formalism because those mechanisms and constructs were not tested. The heteroscedasticity indication for X3 also requires cautious interpretation and robust reanalysis when raw data become available. Future research should expand the geographic scope, use smaller sampling error, combine self-report with independently coded performance evidence, and test theoretically specified mediators or moderators.

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