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Managing Educational Quality: The Relationship between Teacher Performance and Perceived Graduate Quality in Public Elementary Schools

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Abstract: This study examines the relationship between teacher performance and perceived graduate quality in public elementary schools in Pabelan District, Semarang Regency. Using a quantitative, cross-sectional correlational design, data were collected from 128 randomly selected teachers across all 21 public elementary schools in the district. Both variables were measured via teacher self-report questionnaires comprising 26 items for teacher performance and 40 items for perceived graduate quality, and analyzed using simple linear regression. The results reveal a strong, positive, and statistically significant association between teacher performance and perceived graduate quality (B = 0.988, t = 9.886, p < .001, R = 0.660). Teacher performance statistically accounts for 43.6% of the variance in perceived graduate quality (R^2 = 0.436), with classroom instructional implementation and learning evaluation showing the strongest dimensional links. Practically, principals and district supervisors should refocus academic supervision on formative assessment coaching and mobilize peer-mentoring through the *Kelompok Kerja Guru* (KKG) to strengthen literacy–numeracy instruction in underperforming schools.
Keywords: teacher performance; graduate quality; predictive relationship; elementary school; educational quality.

Abstrak: Penelitian ini menganalisis hubungan antara kinerja guru dan mutu lulusan berdasarkan persepsi guru pada sekolah dasar negeri di Kecamatan Pabelan, Kabupaten Semarang. Menggunakan pendekatan kuantitatif dengan desain korelasional *cross-sectional*, data dikumpulkan dari 128 guru yang dipilih secara acak sederhana dari seluruh 21 sekolah dasar negeri di wilayah tersebut. Kedua variabel diukur melalui kuesioner laporan diri (*self-report*) guru yang terdiri atas 26 butir pernyataan kinerja guru dan 40 butir pernyataan persepsi mutu lulusan, kemudian dianalisis menggunakan regresi linear sederhana. Hasil penelitian menunjukkan hubungan positif dan signifikan secara statistik antara kinerja guru dan persepsi mutu lulusan (B = 0,988; t = 9,886; p < 0,001; R = 0,660). Kinerja guru secara statistik menjelaskan 43,6% varians persepsi mutu lulusan (R^2 = 0,436), dengan dimensi pelaksanaan pembelajaran dan evaluasi hasil belajar menunjukkan keterkaitan paling kuat. Secara praktis, kepala sekolah dan pengawas disarankan memfokuskan supervisi akademik pada pembinaan asesmen formatif serta mengoptimalkan pendampingan sejawat melalui Kelompok Kerja Guru (KKG) untuk memperkuat pembelajaran literasi dan numerasi pada sekolah berkinerja rendah.
Kata kunci: *kinerja guru; mutu lulusan; hubungan prediktif; sekolah dasar; mutu pendidikan.*

Introduction

Improving the quality of education is a strategic agenda in human resource development and school-level educational management. Schools, as formal educational institutions, are responsible for preparing graduates who possess not only academic competencies but also strong character, critical thinking skills, adaptability, and readiness to respond to global changes. Within the framework of educational effectiveness, student learning outcomes are shaped through a multilevel process in which school-level conditions, classroom instructional practices, and teacher capacity interact to produce educational outputs (Grissom et al., 2021; Leithwood et al., 2021). In elementary education, graduate quality serves as a foundational benchmark of institutional accountability because it reflects the extent to which primary schooling equips students with the core dispositions, knowledge, and skills required for secondary education and lifelong learning.

Conceptually, graduate quality at the elementary school level refers to the holistic attainment of competency standards expected upon completion of primary education. In the Indonesian national education standards framework, elementary graduate quality encompasses three integrated domains: attitudes (spiritual and social character, moral values, and learning dispositions), knowledge (foundational mastery of literacy, numeracy, and basic scientific and social concepts), and skills (critical thinking, communication, problem-solving, and practical application). Because elementary-level graduate outcomes are cultivated over a multi-year instructional cycle, teachers' professional evaluations of student readiness across these three domains referred to in this study as perceived graduate quality provide a comprehensive, classroom-grounded measure of educational outcomes beyond standardized test scores alone.

Among the various organizational and instructional factors associated with educational quality, teacher performance occupies a central position. Theoretically, teacher performance can be understood through the lens of instructional effectiveness and professional competence models, which conceptualize teaching as a systematic cycle of pedagogical decision-making and classroom execution (Blömeke et al., 2022; König et al., 2021, 2022). Within this framework, as well as Indonesian teacher professional standards, effective teacher performance is operationalized across three core dimensions: (1) lesson planning, which involves designing structured curricula, formulating measurable learning objectives, and selecting appropriate pedagogical strategies; (2) instructional implementation, which entails managing classroom interactions, facilitating active student engagement, and differentiating instruction; and (3) evaluation of learning outcomes, which includes conducting formative and summative assessments, providing constructive feedback, and utilizing assessment data to refine instruction.

Empirical literature underscores the critical role of teachers' professional practices in driving instructional quality. Thoonen et al. (2011) demonstrated that improvements in teachers' classroom instructional practices are closely linked to teacher motivation, professional learning, and supportive school conditions. Although Thoonen et al. (2011) focused primarily on motivational and organizational antecedents of instructional improvement rather than graduate outcomes directly, their findings provide an important theoretical link: sustained teacher performance is not merely an administrative routine, but a dynamic professional process through which teacher capacity translates into higher-quality classroom instruction. Similarly, Admiraal et al. (2021) highlighted the importance of professional learning communities in fostering teacher collaboration and strengthening classroom teaching practices, while Gupta and Lee (2020) showed that structured, site-based professional development enhances instructional effectiveness and student learning outcomes.

Teacher performance is particularly decisive in elementary education because classroom teachers bear primary responsibility for establishing students' foundational competencies in literacy, numeracy, and character formation. Research on school effectiveness consistently supports the link between teacher-related instructional practices and student achievement. Dutta and Sahney (2022) found that teacher job performance was significantly associated with school climate and student achievement within an instructional leadership framework. Likewise, Shen et al. (2021) demonstrated that school performance, as evaluated from teachers' perspectives, is closely tied to the quality of professional and instructional practices within schools. Recent empirical studies further confirm that teachers' pedagogical competence and classroom instructional quality are positively associated with student academic performance across diverse educational contexts, including large-scale national assessments in Indonesia (Jahan & Karmaker, 2026; Kempa et al., 2026; Ping et al., 2026).

In addition to individual pedagogical execution, teacher performance is embedded within broader school organizational dynamics. Kılınç et al. (2021) noted that supportive school leadership and organizational conditions foster positive teacher professional behaviors and commitment. Berkovich and Eyal (2022) further demonstrated that organizational trust mediates the relationship between school leadership and teachers' professional commitment. Taken together, these studies suggest that while organizational conditions enable teacher effectiveness, teacher performance serves as the direct operational mechanism through which school management practices are translated into tangible student and graduate outcomes.

In the Indonesian context, several empirical studies have examined the relationship between teacher performance and educational outcomes, yet notable conceptual and contextual gaps remain. For instance, Nurabadi et al. (2021) examined elementary schools and found that teacher performance was positively associated with student achievement, but treated teacher performance primarily as an intervening variable within a broader leadership model rather than evaluating its direct association with multidimensional graduate quality. Other Indonesian studies have focused predominantly on secondary education; Pujiyati (2018) investigated principal competence and learning management on graduate quality at the junior high school level, while Wahyuni et al. (2025) analyzed school quality transformation involving leadership, supervision, and teacher performance at the senior high school level. Furthermore, existing elementary-level studies frequently rely on narrow single-subject academic scores or general administrative appraisals, rarely aligning the measurement of graduate quality with national accountability benchmarks such as the *Rapor Pendidikan* (Education Report).

Empirical urgency for examining this relationship is evidenced by the longitudinal *Rapor Pendidikan* records across all 21 public elementary schools in Pabelan District, Semarang Regency, from 2023 to 2025. Although district-level mean proficiency increased gradually over the three-year period—from 86.41% (2023) to 89.49% (2024) and 91.47% (2025) in literacy, and from 70.47% to 78.08% and 85.15% in numeracy school-level disaggregation reveals persistent disparities and recurrent setbacks. Specifically, literacy scores ranged from 57.14% (SDN Terban, 2023) to 100.00%, with 10 of 21 schools (47.6%; namely SDN Glawan, SDN Jembrak, SDN Kadirejo 03, SDN Karanggondang, SDN Pabelan, SDN Padaan, SDN Segiri 01, SDN Sumberejo 02, SDN Terban, and SDN Ujung-Ujung 03) experiencing year-on-year declines at least once during the 2023–2025 cycle. Numeracy proficiency exhibited wider dispersion, ranging from 44.44% (SDN Kadirejo 02 in 2023 and SDN Pabelan in 2024) to 100.00%, with 11 schools (52.4%; including sharp 2025 declines at SDN Bendungan from 100.00% to 83.33%, SDN Glawan from 90.00% to 66.67%, and SDN Kauman Lor 03 from 100.00% to 80.00%) recording regressions. Similarly, student character indices fluctuated between 48.64 (SDN Kadirejo 03, 2023) and 78.65 (SDN Bendungan, 2024), with district means rising from 55.83

(2023) to 62.33 (2024) before slipping to 59.91 (2025), as 13 schools (61.9%) experienced downward shifts. These *Rapor Pendidikan* indicators map directly onto the graduate quality construct measured in this study: literacy and numeracy represent the cognitive knowledge and applied problem-solving skill domains, whereas the character index reflects the attitude domain. Preliminary observations across these 21 schools also revealed uneven teacher practices in lesson planning, differentiated classroom delivery, and systematic learning evaluation, underscoring the need to investigate how variations in teacher performance relate to disparities in perceived graduate quality.

To address these empirical and literature gaps, the novelty of this study lies in three specific contributions rather than its geographical setting alone: (1) it shifts the analytical focus from secondary school settings and multi-variable leadership mediation models to a direct, domain-specific examination of how core teacher performance dimensions (planning, implementation, and evaluation) relate to holistic elementary graduate quality (attitudes, knowledge, and skills); (2) it contextualizes the operationalization of graduate quality within the empirical benchmarks of Indonesia's *Rapor Pendidikan* (2023–2025), bridging macro-level school quality indicators with micro-level classroom evaluation; and (3) it adopts a teachers' perspective approach to capture nuanced, day-to-day variations in instructional execution and graduate readiness across public primary schools.

Based on the theoretical framework of instructional effectiveness and prior empirical evidence linking teaching quality to student outcomes, this study investigates the association between teacher performance and perceived graduate quality in public elementary schools in Pabelan District, Semarang Regency. Accordingly, the research hypothesis is formulated as follows: There is a positive and statistically significant relationship between teacher performance and perceived graduate quality in public elementary schools. The findings of this study are expected to contribute to educational management literature by clarifying the empirical link between classroom-level teacher performance and multidimensional graduate quality, while offering actionable insights for principals and school supervisors in designing targeted teacher performance supervision and professional development programs.

Methods

This study employed a quantitative, cross-sectional correlational research design. A cross-sectional correlational design was selected because data on both variables were collected simultaneously at a single time point without experimental manipulation, allowing the researchers to evaluate natural covariation between teachers' instructional performance and their perceptions of graduate readiness. Consistent with this analytical model, the research hypotheses were formulated as follows: H_0: There is no statistically significant positive relationship between teacher performance and perceived graduate quality in public elementary schools ($\beta_1 = 0$). H_1: There is a statistically significant positive relationship between teacher performance and perceived graduate quality in public elementary schools ($\beta_1 > 0$).

The population comprised all 186 teachers across all 21 public elementary schools (*Sekolah Dasar Negeri*) in Pabelan District, Semarang Regency. Using Slovin's formula with a 5% margin of error ($n = 186 / (1 + 186(0.05)^2) = 126.96$), the minimum sample size was 127 teachers. Because Slovin's formula does not account for statistical power or effect size, an *a priori* power analysis was also conducted using G-Power 3.1.9.7 for bivariate linear regression (two-tailed, $\alpha = 0.05$, power $1- \beta = 0.80$, medium effect size $f^2 = 0.15$), indicating a minimum requirement of 55 participants. Thus, the final sample of 128 teachers satisfied both criteria. Participants were selected via simple random sampling from the district roster, ensuring

representation across all 21 schools with 5 to 8 teachers per school (averaging 6.10 respondents per school).

The teacher performance instrument (26 items; theoretical score range: 26–130) was adapted from the Indonesian Teacher Performance Appraisal (*Penilaian Kinerja Guru* [PKG]) framework and instructional effectiveness literature, encompassing three dimensions: lesson planning (8 items), instructional implementation (11 items), and evaluation of learning outcomes (7 items). The perceived graduate quality instrument (40 items; theoretical score range: 40–200) was developed based on the Indonesian Elementary School Graduate Competency Standards (*Standar Kompetensi Lulusan* [SKL]) and aligned with the three core assessment domains of the national *Rapor Pendidikan*: attitudes and character (14 items), cognitive knowledge in literacy and numeracy (14 items), and applied skills (12 items). The operational blueprint and sample items for both instruments are presented in Table 1.

Table 1. Operational Blueprint of Research Instruments

Variable	Dimension / Domain	Operational Indicators	Items	Scale (Range)	Sample Item
Teacher Performance (X)	1. Lesson Planning	Measurable objectives; lesson structure; differentiated media/materials	8	1–5 (8–40)	*Design lesson plans adapted to students' varying literacy and numeracy levels.*
	2. Instructional Implementation	Classroom climate; active learning strategies; student engagement	11	1–5 (11–55)	*I use questioning techniques that encourage students to explain their reasoning.*
	3. Learning Evaluation	Formative/summative assessment; feedback; remedial/enrichment follow-up	7	1–5 (7–35)	*I analyze assessment results to refine my subsequent teaching strategies.*
Total (X)			26	26–130	
Perceived Graduate Quality (Y)	1. Attitudes (Character)	Honesty, discipline, tolerance, collaboration, and learning independence	14	1–5 (14–70)	*Graduating students consistently demonstrate responsibility and respect toward others.*
	2. Knowledge	Foundational literacy comprehension, numerical reasoning, and core subject mastery	14	1–5 (14–70)	*Graduating students comprehend informational texts and solve multi-step math problems.*
	3. Skills	Critical thinking, communication, creativity, and practical problem-solving	12	1–5 (12–60)	*Graduating students communicate ideas clearly and apply concepts to daily tasks.*
Total (Y)			40	40–200	

A pilot study was conducted on 32 elementary teachers outside the main sample. Item construct validity was assessed via Pearson item-total correlations against r-critical = 0.349 (df = 30, $\alpha = 0.05$). For teacher performance, 4 of 30 initial items fell below 0.349 and were

removed, retaining 26 valid items (r = 0.382-0.785). For perceived graduate quality, 5 of 45 initial items were eliminated, retaining 40 valid items (r = 0.365-0.692).

Internal consistency was evaluated using Cronbach's alpha ($\alpha \geq 0.70$; Nunnally & Bernstein, 1994; Hair et al., 2019). Pilot testing (n = 32) yielded $\alpha = 0.939$ for teacher performance and $\alpha = 0.746$ for perceived graduate quality. While $\alpha = 0.939$ indicates strong internal consistency, it also suggests potential conceptual redundancy across closely related pedagogical items. In the main dataset (N = 128), reliability remained stable for teacher performance ($\alpha = 0.928$; planning = 0.841, implementation = 0.876, evaluation = 0.819) and perceived graduate quality ($\alpha = 0.784$; attitudes = 0.752, knowledge = 0.768, skills = 0.731).

Because both constructs were self-reported by the same teachers at one time point, procedural remedies (anonymity and distinct scale anchors) and statistical checks were applied to address common method bias (CMB). Harman's single-factor test showed that the first unrotated factor accounted for 28.4% of total variance (below the 50% threshold), and inter-construct correlation (R = 0.660) remained well below the critical CMB threshold (r > 0.90). Furthermore, although 128 teachers were nested across 21 schools, individual-level regression was retained to evaluate teacher-level covariance while verifying residual independence and accounting for school-level nesting in result interpretation.

Data were analyzed using IBM SPSS Statistics 26. Following descriptive analysis, five classical regression assumptions were tested: (1) residual normality via the one-sample Kolmogorov-Smirnov test ($p > 0.05$), (2) linearity via the ANOVA Test for Linearity ($p > 0.05$), (3) homoscedasticity via the Glejser test ($p > 0.05$), (4) residual independence via the Durbin-Watson statistic (1.5-2.5) to rule out school-clustering autocorrelation, and (5) outlier diagnostics via standardized residuals (ZRESID < 3.0) and Cook's distance (Di < 1.0). Multicollinearity testing was unnecessary for a single-predictor model. Hypotheses were tested using simple linear regression ($Y = \beta_0 + \beta_1 X + e$), interpreting β_1, t-value, R, and R^2 strictly as statistical association rather than causal impact.

Result and Discussion

Descriptive analysis was conducted on responses from 128 public elementary school teachers in Pabelan District, Semarang Regency. To enable transparent verification, respondents' scores were classified into five interpretive categories using the empirical score range formula (Interval = Maximum Score - Minimum Score / 5). For perceived graduate quality (empirical range: 125–200; interval width = 15.0), the categories were defined as: Very Low (125.0-140.0), Low (140.1-155.0), Moderate (155.1-170.0), High (170.1-185.0), and Very High (185.1-200.0). For teacher performance (empirical range: 92–130; interval width = 7.6), the categories were defined as: Very Low (92.0-99.6), Low (99.7-107.2), Moderate (107.3-114.8), High (114.9-122.4), and Very High (122.5-130.0). The descriptive statistics and frequency distributions are presented in Table 2.

Table 2. Descriptive Statistics and Categorical Frequency Distributions

Variable & Descriptive Metrics	Category	Score Interval	Frequency (n)	Percentage (%)
Perceived Graduate Quality (Y)	Very Low	125.0 - 140.0	1	0.78
M = 174.88 (87.44% of max)	Low	140.1 - 155.0	5	3.91
SD = 14.569	Moderate	155.1 - 170.0	54	42.19
Min = 125, Max = 200	High	170.1 - 185.0	20	15.63
	Very High	185.1 - 200.0	48	37.50
Teacher Performance (X)	Very Low	92.0 - 99.6	14	10.94
M = 112.39 (86.45% of max)	Low	99.7 - 107.2	35	27.34
SD = 9.735	Moderate	107.3 - 114.8	27	21.09

Variable & Descriptive Metrics	Category	Score Interval	Frequency (n)	Percentage (%)
Min = 92, Max = 130	High	114.9 - 122.4	29	22.66
	Very High	122.5 - 130.0	23	17.97

As shown in Table 2, perceived graduate quality recorded an overall mean of 174.88 (SD = 14.569), placing the aggregate district score in the High category (170.1-185.0). However, the frequency distribution reveals a dual concentration: while 37.50% of respondents rated graduate quality as Very High, the largest single cluster (42.19%) fell within the Moderate category, indicating that student readiness is perceived unevenly across schools. Similarly, teacher performance yielded an overall mean of 112.39 (SD = 9.735), falling within the Moderate category (107.3-114.8), yet its distribution exhibited a bimodal split, with 38.28% of teachers in the Low and Very Low categories contrasted against 40.63% in the High and Very High categories. At the dimensional level, teacher performance was highest in instructional implementation (M = 48.12/55; 87.49%), followed by lesson planning (M = 34.85/40; 87.13%), and lowest in evaluation of learning outcomes (M = 29.42/35; 84.06%). Across graduate quality domains, attitudes/character scored highest (M = 62.30/70; 89.00%), followed by skills (M = 52.18/60; 86.97%), whereas cognitive knowledge in literacy and numeracy recorded the lowest relative attainment (M = 60.40/70; 86.29%).

Substantively, these distributional patterns indicate substantial heterogeneity in instructional practices and perceived student outcomes across the 21 public elementary schools in Pabelan District, echoing the uneven literacy and numeracy trends reported in the 2023–2025 *Rapor Pendidikan*. Because teacher performance was measured via self-report, the bipolar split between low and high ratings reflects both genuine variation in classroom execution across schools and differences in teachers' self-rating stringency when interpreting evaluative items. Theoretically, this dimensional profile aligns with Blömeke et al. (2022) and Kempa et al. (2026), who emphasize that elementary teacher competence is multidimensional spanning planning, classroom delivery, and assessment and that weaknesses in formative evaluation directly constrain students' foundational literacy and numeracy mastery.

Verification of Classical Regression Assumptions

Prior to hypothesis testing, five statistical assumptions underlying simple linear regression were verified: (1) Residual Normality: The one-sample Kolmogorov-Smirnov test on unstandardized residuals yielded Z = 0.068, p = 0.200 (p > 0.05), confirming approximate normality. (2) Linearity: The ANOVA Test for Linearity indicated a statistically significant linear component (p < .001) and a non-significant deviation from linearity (F = 1.184, p = 0.276 > 0.05), confirming a linear relationship between teacher performance and perceived graduate quality. (3) Homoscedasticity: The Glejser test regressing absolute residuals on teacher performance yielded t = -1.142, p = 0.256 (p > 0.05), demonstrating constant error variance across predicted values. (4) Independence of Residuals: The Durbin-Watson statistic was DW = 1.942 (within the acceptable 1.5-2.5 range), indicating no problematic autocorrelation across observations despite school-level nesting. (5) Outlier and Influential Case Diagnostics: Standardized residuals ranged from -2.41 to 2.18 (ZRESID < 3.0) and maximum Cook's distance was 0.064 (< 1.0), confirming the absence of unduly influential outliers.

Association Between Teacher Performance and Perceived Graduate Quality

To test the research hypothesis and ensure mathematical consistency across sample parameters (R = 0.660, SD_y = 14.569, SD_x = 9.735), simple linear regression analysis was

performed. The ANOVA summary and regression parameter estimates are presented in Table 3 and Table 4.

Table 3. ANOVA Summary for the Simple Linear Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	11,763.42	1	11,763.42	97.73	<.001
Residual	15,165.14	126	120.36		
Total	26,928.56	127			

Table 4. Simple Linear Regression Coefficients and Effect Size Estimates

Predictor	B	SE	Standardized β	t	Sig.	95% CI for B	Decision
Constant	63.842	11.278	-	5.661	<.001	(41.523, 86.161)	-
Teacher Performance (X)	0.988	0.100	0.660	9.886	<.001	(0.790, 1.186)	H_1 Supported

Note: R = 0.660; R^2 = 0.436; Adjusted R^2 = 0.431; Cohen's f^2 = 0.773 (large effect size).

As shown in Tables 3 and 4, the regression model was statistically significant ($F(1, 126) = 97.73$, $p < .001$), producing the equation $Y = 63.842 + 0.988X + e$. Teacher performance demonstrated a strong, positive, and statistically significant relationship with perceived graduate quality (B = 0.988, SE = 0.100, β = 0.660, t = 9.886, $p < .001$, 95% CI [0.790, 1.186]), rejecting H_0 and supporting H_1. The coefficient of determination (R^2 = 0.436, Adjusted R^2 = 0.431) indicates that teacher performance statistically accounts for 43.6% of the variance in perceived graduate quality, representing a large statistical effect (f^2 = 0.773).

Practically, the unstandardized regression coefficient (B = 0.988$) indicates that every 1-point increase in a teacher's performance score (on the 26–130 scale) is associated with an average 0.99-point increase in perceived graduate quality (on the 40–200 scale). Scaled across interpretive tiers, elevating a teacher's performance from the Moderate midpoint (111.0) to the High midpoint (118.7) an improvement of 7.7 points corresponds to an estimated 7.6-point gain in perceived graduate quality, sufficient to shift perceived graduate readiness from the upper Moderate category into the High category. Consistent with the cross-sectional correlational design, this parameter reflects robust empirical association rather than direct causal proof.

Theoretically, this association operates through proximal instructional mechanisms: teachers who design structured lessons, facilitate active cognitive engagement, and apply diagnostic assessment feedback create sustained learning scaffolds that build students' academic mastery and self-regulated dispositions (König et al., 2021, 2022; Scheerens, 2016). Comparing effect magnitudes quantitatively, the explained variance in this study (R^2 = 0.436) is higher than large-scale Indonesian national assessment analyses by Ping et al. (2026), where perceived teaching quality accounted for approximately 12%-18% of student test variance after controlling for socioeconomic background, and aligns closely with Nurabadi et al. (2021), who reported a substantial structural contribution of elementary teacher performance (β = 0.412, R^2 ~ 0.38) alongside leadership predictors. Internationally, our findings corroborate Dutta and Sahney (2022) (β = 0.34), while studies by Jahan and Karmaker (2026) in Bangladeshi secondary schools and Kempa et al. (2026) among certified teachers in Indonesian border islands confirm the transferable pedagogical principle that classroom instructional quality underpins student competency attainment across diverse settings though our higher R^2 partly

reflects single-source perceptual measurement rather than independent student achievement tests.

Dimensional Covariation and Unmodeled Determinants of Graduate Quality

To clarify which specific pedagogical practices drive the overall relationship, bivariate Pearson correlations were examined across the three teacher performance dimensions and three graduate quality domains (Table 5).

Table 5. Inter-Dimensional Pearson Correlation Matrix

Teacher Performance Dimensions	Attitudes (Y1)	Knowledge (Y2)	Skills (Y3)	Overall Graduate Quality (Y)
1. Lesson Planning (X_1)	.482**	.541**	.519**	.574**
2. Instructional Implementation (X_2)	.536**	.618**	.592**	.649**
3. Learning Evaluation (X_3)	.449**	.587**	.548**	.593**

Note: **p < .001 (two-tailed).

Table 5 shows that all performance dimensions correlated positively and significantly with every graduate quality domain ($p < .001$). Specifically, instructional implementation exhibited the strongest association with overall perceived graduate quality ($r = .649$) and cognitive knowledge in literacy and numeracy ($r = .618$), followed by learning evaluation ($r = .593$ overall; $r = .587$ with knowledge) and lesson planning ($r = .574$ overall). These dimensional results indicate that interactive classroom delivery and systematic formative evaluation serve as the most direct operational levers for improving students' foundational literacy, numeracy, and applied skills practices that thrive when supported by teacher motivation and collaborative professional learning communities (Thoonen et al., 2011; Admiraal et al., 2021; Gupta & Lee, 2020).

Conversely, the remaining 56.4% of unexplained variance ($1 – R^2$) confirms that graduate quality is a multidimensional outcome shaped by factors omitted from this bivariate model. Educational effectiveness literature demonstrates that principal instructional leadership, organizational trust, and supportive school climate indirectly shape student outcomes by fostering teacher commitment and professional collaboration (Grissom et al., 2021; Leithwood et al., 2021; Shen et al., 2021; Berkovich & Eyal, 2022; Kılınç et al., 2021). Moreover, unmeasured student and contextual determinants including family socioeconomic status, parental involvement, home literacy environments, and school resource infrastructure (Arrohmatan et al., 2025; Hilman & Tejawiani, 2025; Listyaningrum & Buchori, 2025; Scheerens, 2016; Hasmiwati et al., 2025; Pujiyati, 2018; Wahyuni et al., 2025) inevitably account for substantial variation in elementary graduate outcomes across Pabelan District.

Practical Implications for Educational Management in Pabelan District

Based on the empirical findings, two specific management actions are recommended for principals and school supervisors (*Pengawas Sekolah*) across the 21 public elementary schools in Pabelan District: (1) Refocusing Academic Supervision on Formative Evaluation and Literacy-Numeracy Pedagogy: Because learning evaluation recorded the lowest relative mean among teacher performance dimensions (84.06%) while cognitive knowledge recorded the lowest attainment among graduate quality domains (86.29%), school principals should shift academic supervision from administrative lesson-plan checks toward clinical coaching on diagnostic assessment, feedback quality, and remedial literacy-numeracy instruction. (2) Cluster-Based Peer Coaching via KKG for Low-Performing Schools: Given that 38.28% of teachers scored in

the Low and Very Low performance tiers and 2023–2025 *Rapor Pendidikan* monitoring revealed declines in specific schools, district supervisors should mobilize the *Kelompok Kerja Guru* (KKG) in Pabelan District to pair high-performing mentor teachers with schools experiencing literacy and numeracy stagnation through structured peer-observation and lesson-study cycles.

Limitations and Future Research

Three methodological limitations warrant consideration. First, measuring both teacher performance and perceived graduate quality via single-source teacher self-reports at one time point introduces potential social desirability and common method bias, which may inflate the observed correlation (R = 0.660) compared to studies utilizing independent student assessments. Second, the cross-sectional correlational design establishes statistical covariation rather than longitudinal causal effects. Third, although teachers were nested within 21 schools, analyses were conducted at the individual teacher level. Future research should integrate multi-source objective outcome data (such as actual *Rapor Pendidikan* student proficiency scores or standardized graduation exams), adopt longitudinal designs, and employ hierarchical linear modeling (HLM) to partition teacher-level and school-level variance components.

Conclusion

This study concludes that teacher performance has a strong, positive, and statistically significant relationship with perceived graduate quality in public elementary schools in Pabelan District, Semarang Regency. Addressing the research objective, the findings demonstrate that effective classroom instructional implementation, structured lesson planning, and systematic learning evaluation serve as core pedagogical drivers associated with higher student readiness across attitude, cognitive literacy–numeracy, and applied skill domains. Overall, teacher performance accounts for a substantial proportion of the variance in perceived graduate quality, contributing empirical evidence to educational management literature on how teacher-level instructional execution translates institutional quality standards into elementary school graduate outcomes.

Practically, these findings underscore the need for school principals and district supervisors to prioritize clinical academic supervision particularly in diagnostic assessment and differentiated literacy–numeracy pedagogy alongside peer-coaching programs through the *Kelompok Kerja Guru* (KKG) to elevate underperforming classrooms. Nevertheless, the conclusions must be interpreted within four methodological limitations: reliance on single-source teacher self-report perceptions susceptible to common method bias, geographical restriction to a single district, a cross-sectional correlational design that precludes causal inference, and individual-level analysis of teachers nested within schools. Future research should address these limitations by incorporating objective student learning outcomes (such as actual *Rapor Pendidikan* proficiency metrics), applying multilevel modeling (HLM) to capture school-level effects, and integrating organizational predictors such as principal instructional leadership and school climate.

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