

Empirical Paper

Principal Leadership, Teacher Professionalism, Community Participation, and Educational Quality: A Mixed-Methods Study of Public Elementary Schools in Welahan District

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Abstract

Purpose: This study examined the influence of principal leadership, teacher professionalism and community participation on educational quality in public elementary schools in Welahan District, Indonesia, while exploring how principals support teacher development and stakeholder relationships.

Methodology: A convergent parallel mixed-methods design was adopted. Quantitative data were collected from 80 teachers selected through proportionate random sampling using a five-point Likert questionnaire and analysed with multiple linear regression. Qualitative data were obtained through semi-structured interviews with principals and teachers and analysed using Miles and Huberman's interactive model. Both datasets were integrated during interpretation.

Results: Principals supported teacher professionalism through academic supervision, coaching, professional development programmes, motivational support and school policies. They also strengthened stakeholder relationships through transparent communication, collaboration with school committees, and partnerships with community institutions. Principal leadership did not significantly predict educational quality directly ($\beta = .182$, $p = .054$). Teacher professionalism ($\beta = .452$, $p < .001$) and community participation ($\beta = .266$, $p = .007$) significantly predicted educational quality. Together, the three variables explained 38.6% of the variance in educational quality ($R^2 = .386$, $F = 15.912$, $p < .001$).

Novelty and Contribution: The study integrates quantitative and qualitative evidence to show that principal leadership is associated with educational quality, primarily through strengthening teacher professionalism and stakeholder engagement.

Social and Practical Implications: Educational quality may be strengthened by sustained investment in teacher professional development, participatory school leadership, and structured community involvement to support continuous school improvement.

Keywords: principal leadership, teacher professionalism, community participation, educational quality, mixed methods

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1 Introduction

Education is a planned process of guidance and learning that enables individuals to develop into independent, responsible, creative, knowledgeable, healthy, and morally upright human beings, both physically and spiritually (Juthi et al., 2025). In an era characterised by rapid globalisation and technological transformation, improving educational quality has become imperative (Rahimi & Oh, 2024). Quality education produces graduates capable of navigating contemporary challenges, adapting to digital developments, and contributing positively to society (Sathya, 2025). In particular, at the elementary school level, educational quality serves as the foundational basis for developing superior human resources from an early age (Mamuladze et al., 2024).

Educational quality in schools is determined not merely by curriculum design and physical infrastructure, but it is profoundly shaped by three interrelated components: principal leadership, teacher professionalism and community participation (Mu'alimin et al., 2026; Mincu, 2022;). The principal's leadership plays a crucial role in managing an educational institution. A principal's leadership mobilises institutional resources toward positive change, fosters teacher professionalism, and cultivates community collaboration (Yusuf et al., 2023). Effective leadership is characterised by the ability to inspire and motivate all members of the school community, and to create a conducive learning environment (Shahin et al., 2024). In addition to acting as an administrative manager, the principal serves as a role model who builds harmonious relationships and fosters a culture of quality within the school (Sutrisna et al., 2021). This is demonstrated through functioning as an educator, manager, administrator, supervisor, leader, innovator and motivator (Sutrisna et al., 2021).

As the primary implementers of the learning process, teachers determine the quality of classroom interactions and student outcomes (Wang et al., 2022). Professional teachers not only master subject matter but also apply innovative and student-centred teaching methods (Tang, 2023). Teachers are the spearhead of education and should continuously develop pedagogical, professional, social and personal competencies (Wijaya et al., 2023). However, in reality, many educators still demonstrate low quality due to internal and external factors including teacher professionalism. For Abdurokhim and Ln (2021), teacher professionalism encompasses attitudes, values, behaviour, qualifications, authority and commitment to continuously improving instructional management skills and other competencies.

Meanwhile, the community, encompassing parents, school committees and local stakeholders, provides external support that reinforces the school's educational mission (Nifmaskossu & Sopakua, 2024). As the user of educational services, the community plays an important role of involving individuals, families, professional associations, entrepreneurs and social organisations in the implementation and quality control of education (Ugobueze, 2024). Community participation is reflected in school committees, provision of facilities, supervision of educational programmes, and support for students' character development. Schools that establish strong partnerships with the community tend to create more conducive and responsive learning environments aligned with local needs (Jailani et al., 2025).

In Welahan District' public elementary schools, these three components have been identified as important contributors to educational improvement. Principals have demonstrated participatory, open and innovation-oriented leadership; teachers regularly engage in professional development activities; and the community actively participates through school committees and collaborative programmes (Abdurokhim & Ln, 2021; Mu'alimin et al., 2026). However, the extent to which these elements individually and collectively predict educational quality remains empirically unverified in this specific context.

Existing literature on educational quality has tended to examine principal leadership, teacher professionalism and community participation as discrete variables. While Shen & Wu (2025) established that principal leadership primarily influences student outcomes through indirect pathways, and Engida et al. (2024) demonstrated that teacher quality is among the most powerful predictors of student achievement, few studies have simultaneously examined all three predictors within an integrated mixed-methods framework at the elementary school level in Indonesian contexts.

Empirically, prior studies have reported inconsistent findings regarding the direct effect of principal leadership on educational quality. Some researchers found significant direct effects (Borotoding et al., 2021), while others reported that leadership operates indirectly through mediating variables such as school climate and teacher performance (Nashir, 2024; Apriliani, 2023). These contradictions underscore the need for contextually grounded research. Furthermore, to the researchers' best knowledge, no study has specifically examined the simultaneous contribution of

these three predictors in Welahan District; where unique socio-cultural dynamics and school governance structures may moderate the relationships under investigation.

A conceptual gap also exists in that, prior studies have rarely integrated qualitative evidence to explain quantitative findings, leaving the mechanisms through which leadership and participation influence quality underexplored (Engida et al., 2024). The present study addresses these theoretical, empirical and contextual gaps by employing a convergent parallel mixed-methods design grounded in School Effectiveness Theory, Instructional Leadership Theory (Hallinger & Murphy, 1985) and School-Based Management principles (Hoy & Miskel, 2001).

Conceptual Framework

Based on the theoretical perspectives outlined above, the following conceptual framework guides this study:

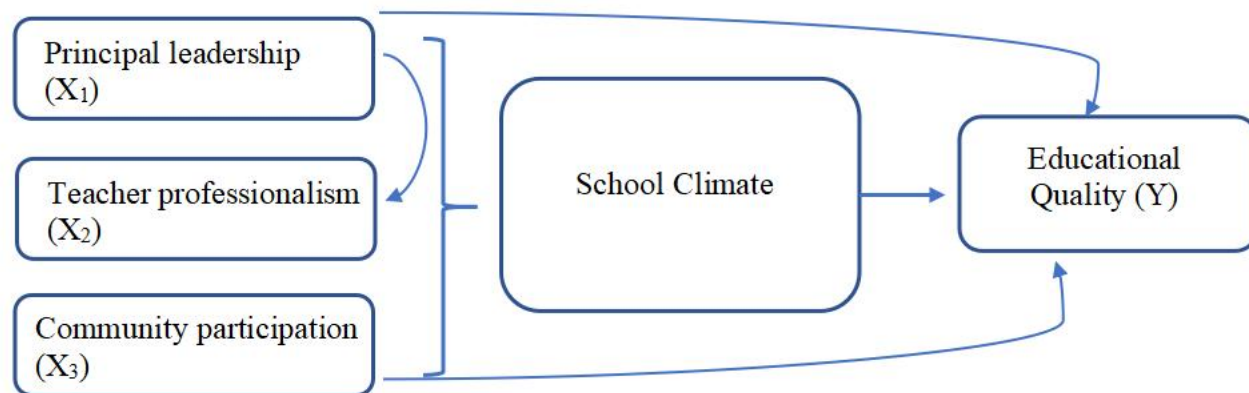


Figure 1 Conceptual framework showing how principal leadership, teacher professionalism and community participation improve educational quality

As illustrated in Figure 1, principal leadership (X₁), teacher professionalism (X₂) and community participation (X₃) are proposed as independent predictors of educational quality (Y), both individually and simultaneously. Additionally, principal leadership is theorised to indirectly influence educational quality through its effects on teacher professionalism and school climate, which is consistent with instructional leadership theory.

Research questions

- i. How do principals facilitate teacher professional development to improve educational quality in public elementary schools in Welahan District?
- ii. How do principals build relationships with stakeholders to improve educational quality?
- iii. Do principals' leadership significantly predict educational quality?
- iv. Does teacher professionalism significantly predict educational quality?
- v. Does community participation significantly predict educational quality?
- vi. Do principals' leadership, teacher professionalism and community participation simultaneously predict educational quality?

2 Literature Review

Principal Leadership and Educational Quality

Principal leadership is widely recognised as a cornerstone of school effectiveness. Hallinger and Murphy (1985) introduced the Instructional Leadership Model, which positions the principal as a learning-focused leader responsible for framing the school vision, supervising instruction, coordinating curriculum and supporting teachers. Subsequent

scholarship by Leithwood et al. (2004) extended this framework by demonstrating that transformational leadership, characterised by intellectual stimulation, inspirational motivation and individualised consideration, significantly enhances teacher commitment and school performance.

Hoy and Miskel (2001) identified effective schools as those characterised by strong instructional leadership, educator commitment to student achievement, emphasis on basic skills, an organised school environment and systematic assessment. Within this framework, the principal's role encompasses the functions of educator, manager, administrator, supervisor, leader, innovator and motivator (Elsanty, 2023). However, the literature also suggests that leadership influence is frequently indirect as it operates through school climate, teacher motivation and organisational culture rather than directly affecting student outcomes (Liu et al., 2021).

H_1 : Principal leadership has a significant positive effect on educational quality.

Teacher Professionalism and Educational Quality

Teacher professionalism is consistently identified as among the most powerful predictors of educational quality (Richter & Richter, 2024). Professional teachers possess four interrelated competencies: pedagogical, professional, social and personal competence (Munawwir et al., 2025). Welker (1992) argues that teacher professionalism is reflected in domain expertise and a commitment to continuous self-development, while Ekinci and Acar (2019) emphasise professional responsibility, work commitment and instructional autonomy as core dimensions.

Professional teachers design, implement and evaluate learning effectively; this create conducive classroom atmospheres and, help teachers adapt instructional strategies to learner characteristics (Maulidiyah & Najah, 2025). Teacher certification in Indonesia serves as a quality assurance mechanism intended to ensure that educators possess the competencies required to fulfil their instructional responsibilities (Munawwir et al., 2025). Collective professional development through learning communities such as Teacher Working Groups (KKG), has been shown to strengthen all four competency dimensions (Rosyid, 2025).

H_2 : Teacher professionalism has a significant positive effect on educational quality.

Community Participation and Educational Quality

Community participation constitutes a foundational principle of School-Based Management (SBM), which grants schools broader autonomy to manage resources while simultaneously encouraging stakeholder involvement in educational implementation (Lestariningsy, 2024). Smit et al. (2007), as cited in Aldrin and Pristinella (2021), define parental involvement as active participation in childcare and education at home and at school; contributing to a consistent learning environment that positively affects student motivation, discipline and academic development. From a systems theory perspective (Mawardi, 2025), schools are embedded within social systems, and educational quality is the product of reciprocal relationships between internal school factors and the external community environment. Community support through school committees, financial contributions and participation in educational programmes strengthens the school's institutional capacity and creates a more conducive learning environment (Hasanushifah & Nurcholis, 2025).

H_3 : Community participation has a significant positive effect on educational quality.

Simultaneous Influence of the Three Predictors

According to Purkey & Smith (1983), Effective schools' theory posits that educational quality is the product of multiple interacting factors, including strong instructional leadership, teacher professional development and community support. Similarly, educational quality improvement requires the active involvement of principals, teachers and the community as interdependent pillars of school governance (Asikin-Garmager, 2017). This integrative perspective suggests that the three predictors operate synergistically rather than independently. Principal leadership creates enabling conditions for teacher professionalism to flourish and community participation to be mobilised, while teacher and community inputs in turn reinforce the principals' strategic directions.

H_4 : Principal leadership, teacher professionalism and community participation simultaneously have a significant positive effect on educational quality.

3 Methodology

Research Design

This study employed a convergent parallel mixed-methods design (Creswell & Plano Clark, 2018), in which quantitative and qualitative data were collected concurrently, analysed separately, and integrated at the interpretation stage. This design was chosen because the research questions required both measurement of effect sizes and explanatory depth. Quantitative data examined the direction and magnitude of predictive relationships, whereas qualitative data illuminated the mechanisms and contextual conditions underlying those relationships. Integration at the interpretation stage allowed for corroboration, elaboration, and, where applicable, the identification of contradictions between the two data strands.

Research Setting and Participants

The study was conducted in public elementary schools (Sekolah Dasar Negeri) in Welahan District, Jepara Regency, Central Java, Indonesia. Welahan District was selected because it represents a semi-urban setting in which the interplay between school governance, teacher professionalism and community engagement is particularly pronounced due to ongoing education reform initiatives. On the one hand, the quantitative sample consisted of 80 teachers selected from a population of 400 through proportionate random sampling using the Slovin formula with a 10% margin of error. While a 5% error margin is preferred in higher-stakes research, the 10% threshold was deemed acceptable given the exploratory nature of the study, the homogeneity of the population (all serving teachers in similar school settings) and resource constraints. On the other hand, the qualitative participants comprised eight principals and twelve teachers who were purposively selected to ensure representation across school sizes, experience levels and school performance categories.

Instruments and Measures

Quantitative data were collected using a structured questionnaire comprising four scales corresponding to the study variables. The principal leadership scale (X_1) consisted of 12 items adapted from Hallinger's Principal Instructional Management Rating Scale (PIMRS), that measured dimensions including vision communication, instructional supervision and professional development facilitation. The teacher professionalism scale (X_2) comprised eight items assessing pedagogical competence, professional commitment and instructional quality. The community participation scale (X_3) included 10 items that measured parental involvement, school committee engagement and community support activities. The educational quality scale (Y) contained 12 items and measured learning effectiveness, student achievement and school climate, consistent with school effectiveness indicators (Hoy & Miskel, 2001). All items used a five-point Likert format (1 = strongly disagree to 5 = strongly agree).

Instrument validity was assessed using Pearson Product-Moment correlation, and reliability was evaluated using Cronbach's Alpha. Results are presented in Table 1.

Table 1 Validity and Reliability of Research Instruments

Variable	Items	Validity Range (r)	Cronbach's α	Status
Principal Leadership (X_1)	12	0.41 – 0.79	0.84	Reliable
Teacher Professionalism (X_2)	8	0.38 – 0.77	0.81	Reliable
Community Participation (X_3)	10	0.43 – 0.75	0.79	Reliable
Educational Quality (Y)	12	0.40 – 0.82	0.86	Reliable

All Cronbach's Alpha coefficients exceeded the threshold of 0.70, which confirmed acceptable internal consistency. Validity coefficients exceeded $r = 0.30$ for all items and confirmed construct validity.

Qualitative data were collected through semi-structured interviews guided by a protocol developed around the research questions. Interviews were conducted in Bahasa Indonesia, audio-recorded with participant consent and

transcribed verbatim. Document analysis of school reports and committee meeting minutes provided triangulating evidence.

Data Analysis

Quantitative analysis was conducted using SPSS version 25. Prerequisite tests included normality (Kolmogorov–Smirnov), linearity (ANOVA deviation from linearity), multicollinearity (Variance Inflation Factor, VIF) and homoscedasticity (Glejser test). Hypothesis testing employed partial regression (t-test) and simultaneous regression (F-test), with effect size interpreted via the coefficient of determination (R^2). The regression equation is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3$$

Where Y = educational quality; X_1 = principal leadership; X_2 = teacher professionalism; X_3 = community participation; a = constant; b_1 , b_2 , b_3 = regression coefficients.

Qualitative data were analysed using Miles and Huberman's (1994) interactive model through three iterative phases: data reduction (coding and thematic categorisation), data display (structured theme matrices) and conclusion drawing. Trustworthiness was established through: (a) member checking, whereby preliminary findings were returned to key participants for verification; (b) triangulation across principal and teacher interviews and documentary sources; (c) an audit trail of analytical decisions; and (d) peer debriefing with a colleague external to the research team. Qualitative and quantitative findings were integrated through a joint display that compared themes with regression results to identify areas of convergence and divergence.

Ethical Considerations

Ethical approval was obtained from the Graduate Program Research Ethics Committee, Muria Kudus University. All participants provided written informed consent before data collection. Participation was voluntary, anonymity was maintained through the use of participant codes, and data were stored securely. The right to withdraw without consequence was communicated to all participants.

4 Results

Respondent Profile

Of the 80 teacher respondents, 57 (71.3%) were female, and 23 (28.7%) were male. The majority (47.6%) were aged 31–40 years, this indicates a predominantly productive-age workforce. Educationally, 85% held a Bachelor's degree (S1), and 15% held a Master's degree (S2); this confirmed compliance with minimum professional qualification standards. Regarding experience, 43.8% had 11–20 years of teaching service, followed by 25% with 5–10 years, 17.5% with fewer than 5 years, and 13.7% with more than 20 years.

Qualitative Findings

Theme 1: Principal Facilitation of Teacher Professional Development

Analysis of interview data with principals and teachers yielded four primary themes describing how principals facilitate teacher professionalism. Principals consistently described their roles as instructional leaders who actively guide, supervise and empower teachers.

The first theme identified is how principals facilitate teacher professional development. In relation to this theme, academic supervision appears to be the most common method used by principals in facilitating teacher professional development. All eight principals described they conduct regular and structured classroom observations followed by reflective feedback sessions. For example, one principal stated:

"I conduct classroom observations at least once per month for each teacher. After the observation, we sit together, and I ask the teacher to reflect on what went well and what could be improved. My role is not to judge, but to guide." (Principal 3)

The second sub-theme involved the provision of professional development programs. The principals facilitated participation in Teacher Working Group (KKG) meetings, internal workshops on literacy and numeracy, and external seminars and webinars. Teachers corroborated this, with one noting:

"The principal always supports us when there are training opportunities. He even allocates budget specifically for teacher development, which is something I did not experience in my previous school." (Teacher 7)

The third sub-theme was motivational leadership and recognition. The principals provided both verbal appreciation and formal recognition through certificates and awards, which creates a culture of value for professional effort. The fourth sub-theme concerned structural policy support, including a school-level policy requiring teachers to attend at least one professional development activity per semester and budget allocations dedicated to training.

Overall, qualitative findings indicate that principals in Welahan District play an active, multidimensional role in facilitating teacher professional development, extending well beyond administrative oversight.

Theme 2: Principal Role in Building Stakeholder Relationships

The second qualitative inquiry examined how principals build relationships with educational stakeholders. Three sub-themes emerged from the data.

The first sub-theme was structured parent communication. All principals reported organising regular parent meetings, class meetings and digital communication through WhatsApp groups and school applications. One principal described:

"We hold a parent meeting at the beginning of each semester where I explain the school program, budget use, and student progress. I also share updates through a WhatsApp group every week. Transparency is important to build parents' trust." (Principal 1)

The second sub-theme concerned school committee collaboration. Principals actively involved school committees in programme planning, policy formulation and resource mobilisation. Teachers also identified themselves as liaisons between the school and parents, facilitating communication about academic and non-academic student development.

The third sub-theme was partnership with external institutions. Principals had established collaborations with community health centres, local businesses through corporate social responsibility programmes, and community leaders who served as resource persons in school activities. Challenges reported included limited funding, differential stakeholder motivation and occasionally conflicting interests, which principals addressed through transparent communication and the demonstration of concrete programme benefits.

Quantitative Findings

Descriptive Statistics

Table 2 Descriptive Statistics for Research Variables (N = 80)

Variable	Min	Max	Mean	SD	Category
Principal Leadership (X ₁)	46	60	53.63	3.26	Good
Teacher Professionalism (X ₂)	28	44	35.82	3.56	Good
Community Participation (X ₃)	40	51	47.14	2.22	Good
Educational Quality (Y)	42	58	51.25	3.38	Good

Prerequisite Tests

The Kolmogorov–Smirnov normality test yielded an Asymp. Sig. (2-tailed) value of .200, confirming normal distribution of residuals. All three linearity tests produced Deviation from Linearity significance values above .05 (principal leadership: $p = .580$; teacher professionalism: $p = .765$; community participation: $p = .135$), confirming linear relationships between predictors and the outcome variable. Multicollinearity was assessed using the Variance Inflation Factor (VIF); all VIF values were below 5.0 (X₁: VIF = 1.21; X₂: VIF = 1.18; X₃: VIF = 1.09), indicating acceptable multicollinearity levels. Homoscedasticity was confirmed using the Glejser test, with no predictor showing a statistically significant relationship with absolute residuals (all $p > .05$).

Partial Regression Test (t-test)

Table 3 Partial Regression Analysis Results

Variable	B	SE	β (Beta)	t	Sig.
(Constant)	6.641	7.621	—	.871	.386
Principal Leadership (X_1)	.189	.096	.182	1.961	.054
Teacher Professionalism (X_2)	.429	.089	.452*	4.826	.000
Community Participation (X_3)	.405	.146	.266*	2.768	.007

Note: * $p < .05$. Dependent variable: Educational Quality. The regression equation is: $Y = 6.641 + .189X_1 + .429X_2 + .405X_3$.

Principal leadership (X_1) did not significantly predict educational quality ($t = 1.961$, $p = .054$), this provided insufficient evidence to support H_1 ; which led to rejecting H_1 and accepting the H_0 . Teacher professionalism (X_2) significantly predicted educational quality ($\beta = .452$, $t = 4.826$, $p < .001$), this led to accepting H_2 and identifying it as the strongest individual predictor. Community participation (X_3) also significantly predicted educational quality ($\beta = .266$, $t = 2.768$, $p = .007$), supporting H_3 .

Simultaneous Regression Test (F-test) and R^2

Table 4 ANOVA Table — Simultaneous Regression

Model	Sum of Squares	df	Mean Square	F (Sig.)
Regression	347.597	3	115.866	15.912 (.000)
Residual	553.403	76	7.282	
Total	901.000	79		

The simultaneous regression was statistically significant ($f(3,76) = 15.912$, $p < .001$), this supported H_4 . The coefficient of determination ($R^2 = .386$, Adjusted $R^2 = .362$) indicates that the three predictors jointly explained 38.6% of the variance in educational quality. While this represents a moderate effect size, it also indicates that 61.4% of the variance remains attributable to factors outside the model, such as school facilities, curriculum quality, student characteristics, government policy support and broader socio-economic conditions; variables that warrant investigation in future research.

5 Discussion

The Principal's Role in Facilitating Teacher Professional Development

The qualitative findings reveal that principals in Welahan District actively fulfil their role as instructional leaders by providing structured academic supervision, facilitating professional development programmes, offering motivational support, and establishing school policies that institutionalise continuous improvement. These findings align with Hallinger & Murphy's (1985) instructional leadership model, which positions the principal as responsible for teacher guidance, curriculum coordination, and the creation of a school environment supportive of quality learning. The emphasis on developmental rather than evaluative supervision, as evidenced by principals' reflective feedback practices, is consistent with the humanistic leadership principles articulated by Hatimah et al. (2025), who argue that principals should build social closeness with teachers, understand classroom practices, and ensure teachers feel institutionally supported.

The provision of budget allocations for teacher training and the requirement for at least one professional development activity per semester reflect the kind of structural policy support identified by A'yun & Muttaqin (2025) as integral to improving teacher performance. These findings substantiate Haiyan & Allan's (2021) conclusion that principals' contribution to teacher development extends beyond individual interactions to encompass the deliberate construction of a school-wide culture of professional learning.

The Principal's Role in Building Stakeholder Relationships

Principals' strategies for stakeholder engagement, including regular parent meetings, digital communication platforms, school committee collaboration and cross-sector partnerships, are consistent with the participatory leadership practices associated with School-Based Management (Lestariningsy, 2024; Saharuddin et al., 2025). The openness and transparency described by principals align with Ayucandra et al.'s (2025) argument that participatory leaders create space for dialogue and collaboration, which builds institutional trust. Teachers' role as intermediaries between the school and the community further strengthens this network, this buttresses Sari et al.'s (2025) observation that teacher-mediated communication is essential to sustaining school-community partnerships.

The challenges reported included limited funding and differential stakeholder participation; this echo Suryaman's (2025) finding that stakeholder involvement is constrained by limited capacity and the absence of clear operational protocols. These challenges suggest that while the intent and structural scaffolding for community engagement are present, the institutionalisation of community participation remains uneven across schools in the district.

The Non-Significant Direct Effect of Principal Leadership on Educational Quality

The most theoretically significant finding of this study is the non-significant direct effect of principal leadership on educational quality. This result merits careful interpretation rather than dismissal.

From a systems theory perspective, this finding is consistent with the well-established principle that school quality is not produced by any single element but by the synergy of multiple interacting components (Indriyanti et al., 2024; Hoy & Miskel, 2001). Leithwood & Sun (2018) found that principal leadership most reliably influences student outcomes through indirect pathways mediated by school culture, teacher motivation, and instructional conditions. In alignment, the present study's quantitative findings suggest this dynamic precisely: while principals are qualitatively documented as active and effective in their leadership roles, this activity manifests in improved educational quality through teacher professionalism and community participation rather than through a direct independent effect.

Several contextual explanations may account for this pattern. First, variation in leadership quality across the sampled schools may be relatively homogeneous, since all principals actively engage in supervision and professional development facilitation, limiting the statistical variance available to detect a significant direct effect (Gümüş & Bellibaş, 2020). Second, the teachers' perceptions of educational quality appear to be strongly anchored to direct classroom experiences, where teacher competence and community support are the most proximate influences. Third, the marginal p-value raises the possibility that with a larger or more heterogeneous sample, a significant effect might emerge.

Crucially, the qualitative data reveal a meaningful discrepancy with the quantitative result; principals are described as actively and substantively influencing educational conditions, yet this influence does not register as a statistically significant direct predictor. This convergence-divergence pattern is itself an important finding. It suggests that the mechanisms of principal influence are more complex than a simple direct-effects model can capture, and that future research should employ mediation models to test the indirect pathways through which leadership affects quality (Pan & Chen, 2021). The practically borderline p-value of .054 further supports the utility of examining mediating effects rather than concluding that leadership is inconsequential.

The Significant Effect of Teacher Professionalism on Educational Quality

Teacher professionalism emerged as the strongest predictor of educational quality, consistent with a substantial body of international scholarship. Backes et al. (2024) identified teacher quality as accounting for more variance in student achievement than any other school-based factor. The present finding aligns with this consensus and extends it to the Indonesian elementary school context.

The mechanism through which teacher professionalism operates is well captured by the qualitative data: professional teachers design contextually appropriate lessons, apply reflective practice, use technology for innovation, and participate actively in collective professional development. These behaviours directly shape the quality of classroom learning interactions, which constitute the primary arena in which educational quality is experienced by students. Maulidiyah & Najah's (2025) contention that professional teachers create conducive learning atmospheres and build student motivation is corroborated by the present findings.

The relatively large proportion of explained variance attributable to teacher professionalism compared to community participation suggests that while external support enhances school conditions, it is the quality of the learning process itself enacted by teachers that most directly determines educational outcomes (Mejía-Rodríguez & Kyriakides, 2022). This has clear practical implications; investment in sustained, high-quality teacher professional development represents the highest-leverage intervention for improving educational quality in settings such as the Welahan District.

The Significant Effect of Community Participation on Educational Quality

Community participation significantly predicted educational quality. This finding supports the SBM framework's emphasis on stakeholder engagement as a structural pillar of school effectiveness (Gusti et al., 2025; Lestariningsy, 2024). Community participation functions through multiple mechanisms: direct resource contributions, monitoring of educational programmes, reinforcement of learning at home and the creation of accountability structures that motivate institutional improvement (Jailani et al., 2025). Assefa (2025) found that parental involvement through school committees and educational programs makes tangible contributions to school quality, consistent with the present result. The systems theory perspective (Mawardi, 2025) provides a useful explanatory framework: schools are embedded in social systems, and their effectiveness is partially determined by the quality of exchanges with their external environment. Where community support is strong and sustained, schools gain additional resources, legitimacy and motivational energy that reinforce the internal learning process.

The finding also points to an important limitation: despite its significance, community participation explains less variance than teacher professionalism suggests that external support is a necessary but not sufficient condition for educational quality. Community engagement amplifies the effectiveness of internal school processes but cannot substitute for teacher competence or sound instructional leadership (De Guzman, 2024).

Simultaneous Effects and Integrated Interpretation

The simultaneous model explained 38.6% of the variance in educational quality. While this is a meaningful proportion for an educational quality study with three predictors, the 61.4% unexplained variance warrants acknowledgement. This residual variance is attributable to factors beyond the scope of the present study, including infrastructure quality, curriculum implementation fidelity, student socio-economic backgrounds, government policy support and contextual variables specific to individual schools (Jailani et al., 2025). Future research should incorporate these variables to develop more comprehensive explanatory models.

The integrated interpretation of qualitative and quantitative findings reveals a coherent pattern: principal leadership creates the enabling conditions and institutional culture within which teacher professionalism and community participation develop and contribute to educational quality. This is consistent with the Kielblock (2025) and Mincu (2022)'s stance which positions school leadership as a distal driver of quality that operates through building organisational capacity rather than directly producing outcomes. The present study provides empirical support for this mediation hypothesis in the Indonesian elementary school context.

6 Conclusion

This study investigated the influence of principal leadership, teacher professionalism, and community participation on educational quality in public elementary schools in Welahan District using a convergent parallel mixed-methods design. Six conclusions are drawn from the integrated findings.

First, principals actively facilitated teacher professional development through academic supervision, coaching, professional development programmes, motivational recognition and supportive school policies. These multidimensional facilitation strategies reflect instructional leadership principles and contribute to a school culture of continuous improvement. Second, principals' built relationships with stakeholders through transparent communication with parents, collaborative engagement with school committees, and partnerships with external community institutions. Teachers served as important intermediaries in sustaining these relationships, though challenges of uneven participation and limited resources were noted.

Third, principal leadership did not exert a statistically significant direct effect on educational quality ($p = .054$). This finding is interpreted not as evidence of leadership irrelevance, but as consistent with indirect-effects models of instructional leadership, in which leadership influence is mediated by teacher quality and school climate. The qualitatively documented richness of principal activity, combined with the borderline p -value, suggests that mediation pathways warrant investigation in future research.

Fourth, teacher professionalism significantly predicted educational quality ($\beta = .452, p < .001$), confirming it as the most powerful direct predictor in the model. Fifth, community participation significantly predicted educational quality ($\beta = .266, p = .007$), which affirms the role of stakeholder engagement as a structural support for school effectiveness. Sixth, the three predictors jointly and significantly explained 38.6% of the variance in educational quality ($F = 15.912, p < .001$), this supports an integrated model in which leadership, teacher quality, and community support operate as complementary and synergistic pillars.

Practical Implications

These findings have practical implications for school improvement policy. Investment in sustained, high-quality teacher professional development represents the most direct pathway to educational quality improvement. Principal development programmes should explicitly address the facilitation of teacher growth and community engagement rather than administrative management alone. Stakeholder participation structures, such as school committees and parental engagement programmes, should be institutionally formalised and resourced to realise their potential contribution.

This study has several limitations: the 10% sampling margin of error and single-district scope restrict generalisability; the cross-sectional design precludes causal inference; the absence of mediation analysis means that the indirect pathways of principal leadership remain theoretically inferred rather than empirically tested. On this basis, future research should employ longitudinal and multi-district designs, incorporate mediation and moderation models, and examine the role of school infrastructure, curriculum quality, and student background variables as additional predictors of educational quality.

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Conflict of Interest

The authors affirm that they have no competing interests to declare.

Declaration of Use of Generative AI

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