



Transformative Educational Leadership and Teacher Professional Development: Assessing Their Contributions to Instructional Innovation and Student Learning Outcomes in the Digital Era

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Abstract

This study examined descriptive differences across instructional leadership, teacher reflection and instructional improvement, instructional quality, and student learning outcomes in Indonesia. Unlike studies focusing on individual leadership effects, it integrated national competency attainment with district-level school classifications and reported improvement patterns. A quantitative descriptive analysis used aggregated secondary data from the 2025 Indonesian Education Report and comparable junior secondary education-quality profiles for Muna, South Konawe, and North Kolaka, selected for indicator availability and comparability. National comparisons assessed literacy and numeracy attainment, while district comparisons examined the proportions of schools classified as Good and showing improvement across five official indicators. Junior secondary literacy attainment reached 76.49% (Good), compared with 70.81% (Moderate) for numeracy, representing a 5.68-percentage-point difference. Across the three districts, Good-category proportions for instructional leadership and teacher reflection exceeded those for instructional quality and learning outcomes. Improvement patterns also differed across indicators and competency domains. These findings identify recurring discrepancies between favorable organizational classifications and less favorable instructional and learning classifications. The analysis does not establish statistical associations, temporal relationships, or causal mediation. Its contribution is a reproducible descriptive comparison that identifies potential priorities for further school-level investigation.

Keywords: instructional leadership, instructional quality, student learning outcomes, teacher professional development, digital transformation.



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INTRODUCTION

Digital transformation has introduced new demands on educational institutions, particularly in the coordination of school leadership, teacher learning, and classroom instruction. Technological development has altered educational management and expanded opportunities for instructional adaptation, although technological availability alone does not establish improvements in teaching or student achievement. Uzorka and Kalabuki (2024) examine the implications of technological advancement for educational leadership and learning experiences, while Kalogeratos et al. (2026) situate digital leadership within broader organizational transformation. Contemporary educational leadership consequently requires attention to institutional adaptability, professional capacity, and instructional improvement, as discussed by Adeoye et al. (2024) and Sadiyah (2026). These developments provide the broader context for examining educational quality, but digital transformation must be distinguished from the organizational and instructional indicators through which educational performance is actually assessed.

Educational leadership encompasses several related but analytically distinct orientations. Transformational leadership emphasizes organizational vision, professional motivation, and institutional change, whereas instructional leadership concentrates on curriculum management, teaching processes, and conditions supporting student learning. Digital leadership concerns the organizational adoption and strategic use of digital technologies and therefore cannot be treated as equivalent to either transformational or instructional leadership. Hadi et al. (2024) establish the

relevance of integrated transformational–instructional leadership behaviors in Indonesian vocational education, while Mustari and Nurhayati (2024) identify instructional leadership as a multidimensional component of educational management. Kamara and Burhanuddin (2025) further position leadership within the alignment of institutional resources and educational objectives. The present analysis is specifically concerned with instructional leadership because the official Indonesian Education Report indicator D.3 measures leadership practices associated with instructional improvement, including the articulation of school vision, curriculum management, and support for teacher reflection.

The relationship between school leadership and student learning requires conceptual differentiation between organizational conditions and classroom processes. Leadership can establish opportunities for professional collaboration, resource coordination, and instructional reflection, but these opportunities do not necessarily produce equivalent improvements in teaching quality or academic achievement. Norman et al. (2025) identify connections among educational leadership, teacher professional development, and digital innovation, whereas Ghamrawi et al. (2024) examine the capacity of transformative professional development to strengthen teacher leadership. These contributions support the theoretical proposition that professional learning may connect organizational leadership with instructional practice. However, the existence, direction, and magnitude of such relationships cannot be established solely from differences in aggregated education-quality indicators. An empirical examination must therefore distinguish the conceptual sequence proposed in leadership scholarship from relationships demonstrated through the available data.

Teacher professional development also requires a more precise conceptual definition. Formal training, collaborative learning, mentoring, digital competence development, and reflective teaching constitute related but distinct aspects of professional development. Rajput and Sharma (2025) describe professional development in digitally changing educational environments as a continuing process of pedagogical adaptation, while King (2002) identifies the potential of educational technology training to support transformative professional learning. Anwar (2025) further discusses digital competence within the relationship between transformational leadership and teacher performance. Although these studies establish the broader relevance of professional capacity development, the present analysis does not directly measure training participation, mentoring arrangements, or individual digital competence. Instead, the official indicator D.2 captures teacher reflection and instructional improvement, which is treated as an observable component of continuing professional learning rather than a comprehensive measure of teacher professional development.

Professional learning becomes educationally relevant when teachers apply acquired knowledge and reflective insights to instructional practice. Hussain et al. (2025) examine professional development in relation to transformational leadership and digital pedagogical innovation, while Surohmat and Firdaus (2025) discuss the implications of digitally oriented teacher leadership for primary and secondary educational quality. These perspectives suggest that organizational support for teacher learning may be important for classroom improvement, although the effectiveness of particular professional-development activities depends on conditions not captured by a single aggregate indicator. Honcharuk et al. (2024) similarly position educational innovation within broader institutional transformation. The distinction between professional activity and demonstrated instructional quality is therefore fundamental: favorable assessments of teacher reflection cannot automatically be interpreted as evidence that classroom practices have improved to the same extent. Digital pedagogical innovation remains a relevant theoretical concern, but it is not independently evaluated through the indicators analyzed here.

Instructional quality constitutes a separate analytical dimension because it concerns the educational processes experienced within classrooms. Leadership orientations may support professional experimentation and organizational learning, but the quality of instruction depends on how teaching methods, classroom management, and student support are implemented. Sliwka et al. (2024) associate transformational leadership with innovative school practices that support deeper learning, while Munajat (2025) discusses the relationship among transformational leadership, pedagogical competence, and learning-management innovation. Bwembya et al. (2024) emphasize the importance of transformative pedagogical approaches for developing contemporary learning competencies. These studies provide conceptual grounds for examining instructional quality alongside organizational leadership and teacher reflection, rather than assuming that positive organizational conditions are sufficient indicators of effective teaching. The official instructional quality indicator D.1 offers an

observable measure of this classroom-oriented dimension without independently establishing the occurrence of instructional innovation.

The organizational conditions surrounding instructional improvement also involve professional culture and evidence-informed reflection. Support for action research, collaborative inquiry, and teacher reflection may contribute to the identification of instructional problems and the development of appropriate responses (Moktar et al., n.d.). Chakravarty et al. (2025) examine the relationship between transformative leadership, academic staff capacity, and data-informed decision making in higher education, while Ntavlourou et al. (2026) explore leadership orientations and digital transformation among primary education teachers. These findings address different educational populations and institutional contexts, which limits their direct comparability with aggregated junior secondary education indicators. Their collective relevance lies in identifying organizational and professional processes that warrant consideration when examining instructional quality. Nevertheless, evidence concerning these processes should not be interpreted as demonstrating a common causal mechanism across educational levels or institutional settings.

A specific empirical limitation emerges from the different outcomes and measurement approaches emphasized in the existing literature. Research on leadership and teacher competence provides evidence concerning professional and organizational dimensions (Norman et al., 2025; Anwar, 2025), while studies of pedagogical innovation emphasize changes in instructional practices and learning environments (Hussain et al., 2025; Sliwka et al., 2024). Other contributions examine institutional transformation and digital leadership without establishing directly comparable measures of organizational conditions, instructional processes, and student competency outcomes (Chakravarty et al., 2025; Kalogeratos et al., 2026). These research strands do not, by themselves, establish whether relatively favorable leadership and professional-reflection assessments are accompanied by similarly favorable instructional-quality and learning-outcome classifications within a common administrative reporting framework. The unresolved descriptive question concerns the extent to which differences and improvement patterns across these dimensions converge or diverge at the level of education systems. Examining such discontinuities offers an empirical contribution distinct from estimating the effects of leadership on individual teachers or students.

Indonesia provides a relevant setting for this inquiry because national education reporting integrates learning outcomes and instructional-process indicators while educational conditions vary across administrative areas. The Indonesian Education Report includes literacy, numeracy, instructional quality, teacher reflection and instructional improvement, and instructional leadership within a common indicator framework (Kemendikdasmen, 2026). Its national achievement figures describe the proportion of students attaining minimum competency, whereas district-level quality profiles can describe the proportion of schools assigned a particular category for each indicator. These measures offer complementary perspectives but differ in their units of analysis and cannot be directly interpreted as equivalent measurements. The present district comparison includes Muna, South Konawe, and North Kolaka because their available junior secondary education-quality profiles contain comparable indicator classifications and improvement records. Their selection supports a focused comparison of three local education systems in Southeast Sulawesi; it does not establish geographic or statistical representativeness of Indonesia's wider educational system.

The principal contribution of this research is the identification of descriptive discontinuities across organizational, professional, instructional, and learning indicators using complementary levels of official education reporting. Three analytical objectives guide the investigation: to establish the differences between national junior secondary literacy and numeracy attainment; to compare the proportions of schools classified as Good in instructional leadership, teacher reflection and instructional improvement, instructional quality, literacy, and numeracy across the three districts; and to determine whether reported improvements exhibit similar or divergent patterns across these dimensions. The corresponding analytical questions concern the extent of differences between competency domains, the distribution of favorable school-level classifications, and the consistency of improvement across indicators. A conceptual ordering from instructional leadership through professional reflection and instructional quality to learning outcomes informs the interpretation, consistent with the broader scholarship of Ghamrawi et al. (2024), Hussain et al. (2025), and Norman et al. (2025). This ordering is used as a framework for descriptive comparison rather than as a statistically tested mediation model.

The analysis neither estimates causal effects nor treats digital leadership, digital competence, or instructional innovation as independently measured variables.

RESEARCH METHODS

This research employed a quantitative descriptive design based on secondary data obtained from official Indonesian education reporting sources. The principal national dataset consisted of the 2025 Indonesian Education Report and associated National Assessment reporting information published by the Ministry of Primary and Secondary Education of Indonesia. The analysis used reported information derived from the Minimum Competency Assessment (*Asesmen Kompetensi Minimum*), the Learning Environment Survey, and relevant education administrative records. National achievement data were used to describe literacy and numeracy attainment across educational levels, while regional education-quality profiles supplied indicator classifications and reported changes for junior secondary schools. The design was descriptive and comparative rather than explanatory in the statistical sense because the available observations did not support estimation of individual-level relationships, causal effects, or mediation pathways.

Junior secondary education constituted the principal analytical focus because comparable organizational, instructional, and learning indicators were available at this educational level. National literacy and numeracy percentages for primary, junior secondary, senior secondary, and vocational secondary education were retained as contextual comparisons, whereas the regional analysis was restricted to junior secondary schools. Muna, South Konawe, and North Kolaka were selected purposively on the basis of the availability and comparability of their reported indicator classifications and improvement data. The district profiles covered 81 junior secondary schools in Muna, 85 in South Konawe, and 37 in North Kolaka, representing 203 schools across the three selected districts. These figures served as district-specific denominators for calculating proportions of schools within each reported category. The selection was neither random nor intended to represent all Indonesian districts, and conclusions were restricted to the national descriptive results and the three observed local education systems.

Operationalization of Variables

Instructional leadership was operationalized using indicator D.3, which concerns school leadership practices supporting improvement in teaching and learning. Within the official education-quality framework, this dimension encompasses the articulation and implementation of school vision, curriculum management, and institutional support for teacher reflection. This definition corresponds more directly to instructional leadership than to the broader constructs of transformational or digital leadership. Hadi et al. (2024) provide a conceptual basis for distinguishing and integrating transformational and instructional leadership behaviors, while Mustari and Nurhayati (2024) emphasize the instructional responsibilities of school leaders. In the present analysis, D.3 was used exclusively as an observed instructional leadership indicator, without assuming that its classification independently measures organizational transformation, technological leadership, or individual principals' complete leadership capabilities. District comparisons employed the number and proportion of schools classified as Good in the reported indicator rather than unreported individual leadership scores.

Teacher reflection and instructional improvement were measured using indicator D.2. The official indicator concerns teachers' engagement in learning about teaching, reflection on instructional practice, and the application of improvements arising from professional reflection. These activities represent components of continuing professional learning, consistent with the broader understanding of professional development discussed by King (2002) and Rajput and Sharma (2025). However, D.2 does not provide a comprehensive measurement of formal training participation, mentoring quality, professional certification, or teachers' digital competence. The relationships among leadership, professional learning, and teacher capacity discussed by Ghamrawi et al. (2024) and Norman et al. (2025) therefore informed the conceptual interpretation without expanding the empirical meaning of D.2. Although the official framework recognizes innovative teaching practices within the broader reflection-and-improvement dimension, the present analysis did not separately examine an instructional-innovation subindicator. The measured variable is consequently identified throughout the analysis as teacher reflection and instructional improvement rather than as a direct or exhaustive measure of teacher professional development.

Instructional quality was operationalized using indicator D.1, representing the quality of teaching and learning processes assessed within the official education-reporting framework. Its substantive dimensions concern classroom management, psychological support for students, and instructional methods intended to facilitate learning. These components distinguish instructional quality from leadership practices and teacher professional-reflection activities, although the constructs remain conceptually related. Hussain et al. (2025) discuss the relevance of professional capacity to pedagogical innovation, while Sliwka et al. (2024) examine leadership practices associated with deeper learning environments. The present analysis did not independently assess classroom observations, instructional technology integration, or the implementation of particular pedagogical innovations. D.1 was therefore interpreted according to its official reporting scope, and district-level comparisons used the reported proportions of schools classified as Good without equating those classifications with direct measurements of individual students' classroom experiences.

Student learning outcomes were represented by literacy indicator A.1 and numeracy indicator A.2, which were examined as separate competency domains. National percentages described the proportion of students reported to have attained minimum competency within the respective domains, rather than average test scores or comprehensive measures of academic achievement. The national reporting classification applied to these percentages was Good when more than 75% of students attained minimum competency, Moderate when the percentage ranged from 40% to 75%, and Low when it was below 40% (Kemendikdasmen, 2026). These thresholds were applied only to the national minimum-competency percentages and were not assumed to constitute the scoring rules for instructional leadership, teacher reflection, or instructional quality. District-level literacy and numeracy measures represented the proportions of schools assigned the Good category for A.1 and A.2 under the relevant education-quality reports. Consequently, national student attainment percentages and district school-category percentages were analyzed independently rather than combined into a common measurement scale.

Data Processing and Integration Procedures

National and district data were extracted from the reported education tables while retaining their original indicator labels, educational levels, reporting categories, and units of analysis. For the national comparison, the literacy–numeracy difference was calculated by subtracting the numeracy attainment percentage from the literacy attainment percentage at each educational level. District Good-category proportions were calculated by dividing the number of schools classified as Good for a particular indicator by the total number of schools included in the corresponding district report and multiplying the result by 100. The same denominator-based procedure was applied to the number of schools reported as showing improvement. The denominators were 81 schools for Muna, 85 for South Konawe, and 37 for North Kolaka. Reported proportions were retained or rounded to two decimal places, with arithmetic consistency assessed against the school counts available in the analytical tables. These calculations represented transformations of published aggregate information rather than estimates derived from newly collected individual-level observations.

Data comparability was assessed through the reported indicator codes, descriptions, category definitions, and school denominators. District status comparisons retained the classifications Good, Moderate, Low, and Data Unavailable, while improvement comparisons retained Improved, Unchanged, Declined, and Data Unavailable. The underlying education-reporting framework uses indicator-specific measurement and classification procedures; consequently, assignment to a common category does not imply that D.1, D.2, D.3, A.1, and A.2 possess equivalent original scores or measurement properties. No common numerical thresholds were imposed on the different process indicators. The available aggregate tables also did not provide the complete underlying survey responses, item-level scores, or matched school-level records required to re-estimate the original indicator scales. Comparisons were therefore restricted to published classifications and their distributions, with missing-category information treated according to the source reports rather than imputed.

Data Analysis

The descriptive analysis consisted of four complementary procedures. First, national literacy and numeracy attainment percentages were compared across educational levels, and the differences between

competency domains were expressed in percentage points. Second, the proportions of junior secondary schools classified as Good were compared across instructional leadership (D.3), teacher reflection and instructional improvement (D.2), instructional quality (D.1), literacy (A.1), and numeracy (A.2) within Muna, South Konawe, and North Kolaka. Third, the reported proportions of schools showing improvement were examined across the same indicators to identify convergence and divergence between changes in organizational, professional, instructional, and learning classifications. Fourth, the observed differences were synthesized to identify recurring distributions, particularly whether relatively high proportions of favorable instructional leadership and teacher-reflection classifications were accompanied by comparable proportions for instructional quality and learning outcomes. These procedures were intended to describe the organization of reported indicators rather than quantify statistical relationships between individual variables.

The conceptual framework specified instructional leadership as an organizational condition, teacher reflection and instructional improvement as a professional-process dimension, instructional quality as a classroom-process dimension, and literacy and numeracy as distinct learning-outcome dimensions. This sequence provided a theoretical structure for organizing comparisons but did not constitute an estimated pathway model. The analysis did not calculate correlations, regression coefficients, structural equation parameters, indirect effects, or causal mediation statistics. Because the available data consisted of national aggregates and district-level distributions, it was not possible to establish whether the schools classified as Good in one dimension were the same schools classified as Good in another dimension. Differences in district proportions therefore demonstrated variation in category prevalence rather than measured associations among matched schools. Improvement classifications were likewise interpreted as reported changes in indicator status, not as evidence of temporal causal effects between leadership, teacher reflection, classroom instruction, and student achievement.

Analytical consistency was examined through comparisons across three forms of reported evidence: national literacy and numeracy attainment, district distributions of Good-category classifications, and district distributions of improvement classifications. Recurrent differences were identified when a similar ordering of indicator proportions appeared across the selected districts, while divergent patterns were retained rather than adjusted to conform to the conceptual framework. This comparison served as a descriptive consistency check, not a formal statistical robustness test. The analysis preserved the distinction between student attainment percentages at the national level and school-category proportions at the district level. Potential influences arising from socioeconomic conditions, teacher characteristics, institutional resources, and geographical variation were recognized as unmeasured contextual factors rather than explanatory variables. No adjustments for these factors were conducted, and no results requiring access to unreported individual or school-level datasets were introduced.

Methodological Contribution and Scope

The methodological contribution lies in using a consistent indicator framework to locate discrepancies between organizational classifications, professional-reflection classifications, instructional quality, and reported learning outcomes across complementary analytical levels. National literacy and numeracy attainment provided a competency-specific reference, while district school classifications and improvement patterns revealed differences not visible in national achievement summaries alone. This approach extends beyond the isolated presentation of official statistics by explicitly examining the relative distribution of favorable classifications and the consistency of reported changes across educational dimensions. Its contribution remains descriptive: the comparison identifies potential discontinuities warranting subsequent investigation rather than verifying the organizational mechanisms responsible for them. The absence of matched school-level observations, direct digital-pedagogy measures, and formal statistical association tests was treated as a methodological boundary when interpreting the results.

RESULTS AND DISCUSSION

National Student Learning Outcomes and the Strategic Position of Junior Secondary Education in Educational Transformation

The national education data provide the empirical basis for examining the relationship between educational processes and student learning outcomes. The 2025 Education Report covers 288,355 educational institutions, involving 460,862 school principals, 3,981,602 educators, and 6,830,704 students across Indonesia. The report integrates National Assessment, Learning Environment Survey, and administrative education data, thereby capturing both learning outcomes and institutional conditions. This coverage enables school leadership, teacher professional capacity, and instructional quality to be examined within a common education-quality framework (Norman et al., 2025; Kalogeratos et al., 2026).

Table 1. Coverage of the 2025 Indonesian Education Report

Component	Number
Educational institutions	288,355
School principals	460,862
Educators	3,981,602
Students	6,830,704

Source: Indonesian Ministry of Primary and Secondary Education, Education Report 2025.

The breadth of national reporting provides a methodological advantage over localized perception-based surveys because it establishes a common reference for the scale and distribution of educational outcomes. The present analysis uses that national reference together with district-level indicators to compare organizational, instructional, and learning dimensions. This perspective is consistent with Kamara and Burhanuddin (2025), who argue that educational leadership should be understood in relation to systemic educational transformation rather than merely as the individual behavior of school leaders. The combined national and district evidence provides a broader empirical basis for evaluating whether relationships identified in earlier leadership research are visible within heterogeneous Indonesian education settings (Hadi et al., 2024; Ntavlourou et al., 2026).

The 2025 learning-outcome data reveal substantial variation between literacy and numeracy attainment across educational levels. At the junior secondary level, 76.49% of students achieved the minimum literacy competency, exceeding the corresponding rates at primary schools (65.66%), senior secondary schools (72.23%), and vocational secondary schools (65.08%). The proportion attaining minimum numeracy competency at the junior secondary level reached 70.81%, compared with 59.45% at primary schools, 67.14% at senior secondary schools, and 60.22% at vocational schools. Under the national classification system, achievement above 75% is categorized as Good, 40–75% as Moderate, and below 40% as Low; consequently, junior secondary literacy has entered the Good category, whereas numeracy remains within the Moderate category.

Table 2. Minimum Literacy and Numeracy Competency Achievement by Educational Level, 2025

Educational Level	Literacy (%)	Numeracy (%)	Literacy–Numeracy Gap (percentage points)	Literacy Category	Numeracy Category
Primary School	65.66	59.45	6.21	Moderate	Moderate
Junior Secondary School	76.49	70.81	5.68	Good	Moderate
Senior Secondary School	72.23	67.14	5.09	Moderate	Moderate

Vocational Secondary School	65.08	60.22	4.86	Moderate	Moderate
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Source: Indonesian Ministry of Primary and Secondary Education, Education Report 2025.
Differences were calculated from the reported national percentages.

The 5.68-percentage-point difference between literacy and numeracy achievement at the junior secondary level constitutes an important empirical finding for the present study. The result indicates that relatively strong achievement in one competency domain cannot be assumed to reflect equivalent performance in another domain. This pattern justifies analyzing literacy and numeracy as separate outcome indicators rather than combining them into a single composite measure of student learning. The separation is also theoretically relevant because the two domains involve partially distinct pedagogical processes, instructional demands, and cognitive competencies (Sliwka et al., 2024; Bwembya et al., 2024).

The comparatively strong performance of junior secondary education should not, however, be interpreted as evidence that instructional-quality challenges have been resolved. A numeracy achievement rate of 70.81% indicates that a substantial proportion of students have yet to attain the minimum competency threshold, and the national rate has not crossed the 75% threshold required for the Good classification. Further improvements therefore require interventions extending beyond curriculum provision and technological infrastructure toward strengthening the organizational and instructional capacities of schools. Uzorka and Kalabuki (2024) emphasize that technological advancement can improve educational experiences and outcomes only when accompanied by corresponding changes in educational leadership, while Surohmat and Firdaus (2025) position the digital transformation of teacher leadership as an important strategy for improving the quality of primary and secondary education.

This pattern is particularly relevant in the context of digital transformation because technological availability does not automatically generate pedagogical improvement. In the present framework, digital transformation is treated as an educational context whose value depends on the organizational and instructional processes through which technology is used. Adeoye et al. (2024) conceptualize twenty-first-century leadership as a catalyst for sustainable educational reform, while Honcharuk et al. (2024) demonstrate the close connection between educational innovation and systemic digital transformation. National achievement figures are therefore interpreted together with organizational and instructional indicators rather than as isolated descriptive outcomes.

These national patterns justify evaluating the relationship between leadership and student achievement through intermediate professional and instructional indicators rather than through a single direct association. Prior research shows that leadership affects learning environments primarily by shaping teachers' professional capacities and instructional practices (Ghamrawi et al., 2024; Hussain et al., 2025). Teacher professional development represents the professional process through which knowledge, skills, and reflective capabilities are strengthened, whereas instructional quality represents the classroom setting in which those capabilities are enacted. The national evidence is therefore interpreted in relation to the analytical sequence of school leadership, teacher professional development, instructional quality, and student learning outcomes.

Instructional Leadership, Teachers' Professional Reflection, and Instructional Quality at the School Level

A comparative analysis of junior secondary education-quality profiles was conducted across Muna, South Konawe, and North Kolaka because the official regional reports provide equivalent distributions for Good, Moderate, Low, and Data Unavailable categories. These three districts constitute the regional units included in the analysis and are not treated as nationally representative. Their inclusion provides a controlled comparison of how instructional leadership, professional reflection, instructional quality, and student outcomes differ across local education systems using a common reporting structure. The profiles include 81 junior secondary schools in Muna, 85 in South Konawe, and 37 in North Kolaka.

Table 3. Percentage of Junior Secondary Schools Classified as Good Across Selected Educational Indicators

District	Literacy A.1 (%)	Numeracy A.2 (%)	Instructional Quality D.1 (%)	Reflection and Improvement D.2 (%)	Instructional Leadership D.3 (%)
Muna	33.33	29.63	49.38	97.53	97.53
South Konawe	24.71	29.41	56.47	87.06	87.06
North Kolaka	24.32	24.32	62.16	86.49	86.49

Source: Educational Quality Profiles of Southeast Sulawesi. Percentages were calculated as the number of junior secondary schools classified as Good divided by the total number of schools reported for each district.

Muna presents the most pronounced disparity between organizational-process indicators and student learning outcomes. Seventy-nine of the 81 junior secondary schools, equivalent to approximately 97.53%, were classified as Good in both instructional leadership and reflection and instructional improvement. In contrast, only 49.38% of schools were categorized as Good in instructional quality, while the corresponding proportions for literacy and numeracy were only 33.33% and 29.63%, respectively. This divergence indicates that favorable organizational leadership and professional-reflection conditions do not necessarily translate immediately or uniformly into high-quality classroom instruction and student achievement.

South Konawe displays the same general separation between organizational-process indicators and student outcomes. Approximately 87.06% of junior secondary schools were classified as Good in instructional leadership and reflection and instructional improvement, whereas 56.47% achieved the Good category for instructional quality. The corresponding proportions were 24.71% for literacy and 29.41% for numeracy. The observed profile demonstrates that a simple direct association between leadership and achievement is insufficient to describe the distribution of educational quality indicators within the district.

North Kolaka displays a somewhat different configuration. Instructional quality reached the Good category in 62.16% of schools, the highest proportion among the three districts, whereas instructional leadership and reflection and instructional improvement each reached approximately 86.49%. Nevertheless, only 24.32% of schools were classified as Good in both literacy and numeracy. The pattern suggests that even relatively favorable instructional environments coexist with substantial variation in student outcomes, which may reflect socioeconomic composition, teacher characteristics, school resources, student prior achievement, geographic conditions, and other contextual factors operating beyond school leadership alone.

The gap between instructional leadership and instructional quality identifies a clear empirical discontinuity between organizational conditions and classroom processes. In Muna, the difference between schools rated Good in instructional leadership (97.53%) and instructional quality (49.38%) reached 48.15 percentage points; the corresponding gaps were 30.59 points in South Konawe and 24.33 points in North Kolaka. These differences indicate that strong leadership ratings were not matched by equivalent instructional-quality ratings. Norman et al. (2025) identify leadership, professional development, and digital innovation as interconnected determinants of teacher competence improvement, while Ghamrawi et al. (2024) demonstrate that transformative professional-development models can cultivate teacher leadership and professional agency. The observed gaps are therefore consistent with the placement of teacher professional development as an intermediate professional process between leadership conditions and classroom instruction.

Instructional quality recorded lower Good-category proportions than instructional leadership and professional reflection in all three districts. The differences show that favorable organizational and professional-process indicators were not accompanied by equivalent classroom-level quality. This observed ordering provides the empirical basis for positioning instructional quality after teacher professional development within the analytical sequence used in the study. Sliwka et al. (2024) associate transformational leadership with innovative school practices that promote deeper learning, while

Munajat (2025) identifies a conceptual nexus linking transformational leadership, pedagogical competence, and learning-management innovation.

The digital dimension also requires careful conceptual interpretation. Administrative indicators reflecting the use of information and communication technologies should not automatically be interpreted as measures of digital instructional readiness because digital administrative management and digitally mediated pedagogy represent conceptually distinct constructs. Rajput and Sharma (2025) emphasize that professional development in the digital age requires the continuing adaptation of teachers' pedagogical and technological competencies, while Anwar (2025) identifies digital competence as an important mechanism connecting transformational leadership with teacher performance. Uzorka and Kalabuki (2024) similarly demonstrate that the educational value of technology depends on how technological development is integrated within leadership and learning processes.

Taken together, the district-level evidence identifies school leadership as a relatively distal organizational indicator of student learning conditions. High leadership ratings coexist with materially lower instructional-quality and achievement ratings, indicating that organizational strength is not equivalent to classroom or learning performance. Teachers remain the actors through whom organizational conditions are translated into instructional practice, and Hussain et al. (2025) identify professional development as an important mechanism linking transformational leadership with digital pedagogical innovation. The observed district pattern is therefore consistent with an indirect organizational-to-instructional relationship, while the aggregated design does not support a formal causal mediation claim.

School Improvement Dynamics Across Leadership, Instruction, and Learning Indicators

The analysis of changes in educational indicators provides a second empirical layer concerning the dynamics of school improvement. The Southeast Sulawesi education-quality profiles classify changes in school performance as Improved, Unchanged, Declined, or Data Unavailable relative to the preceding reporting period. These categories permit direct comparison of whether changes in instructional leadership and professional reflection occur alongside changes in instructional quality and learning outcomes. The change data are interpreted as descriptive temporal evidence and are used to assess alignment or divergence across organizational, instructional, and outcome indicators rather than to infer causality.

Table 4. Percentage of Junior Secondary Schools Showing Improvement Across Selected Indicators

District	Literacy Improved (%)	Numeracy Improved (%)	Instructional Quality Improved (%)	Reflection/Improvement Increased (%)	Instructional Leadership Increased (%)
Muna	41.98	74.07	38.27	71.60	81.48
South Konawe	57.65	77.65	38.82	70.59	78.82
North Kolaka	62.16	72.97	67.57	86.49	81.08

Source: Educational Quality Profiles of Southeast Sulawesi. Percentages were calculated relative to the total number of junior secondary schools reported for each district.

Muna demonstrates that improvements in instructional leadership occurred in approximately 81.48% of junior secondary schools, whereas reflection and instructional improvement increased in 71.60% of schools. Instructional quality improved in only 38.27% of schools, while literacy and numeracy improvement was recorded in 41.98% and 74.07%, respectively. The uneven pace of improvement across these indicators indicates that organizational change at the leadership level may not be immediately reflected in classroom instructional quality during the same reporting period. Such a temporal pattern is consistent with transformational perspectives that conceptualize organizational

improvement as a cumulative process requiring the development of professional capacity before broader educational outcomes become observable (Chakravarty et al., 2025; Kalogeratos et al., 2026).

South Konawe reveals a comparable but uneven improvement pattern. Instructional leadership improved in approximately 78.82% of schools and reflection and instructional improvement increased in 70.59%, whereas instructional quality improved in only 38.82%. Literacy improved in 57.65% of junior secondary schools and numeracy in 77.65%. The divergence demonstrates that improvement did not occur at the same rate across organizational, instructional, and outcome dimensions and does not support a single linear interpretation of school improvement.

North Kolaka presents the strongest alignment among the three districts. Approximately 81.08% of schools experienced improvement in instructional leadership, 86.49% in reflection and instructional improvement, and 67.57% in instructional quality, while literacy and numeracy improved in 62.16% and 72.97% of schools, respectively. The ordering of these changes is consistent with the study's mechanism-oriented interpretation because improvements in organizational and professional indicators were accompanied by comparatively strong improvement in instructional quality and learning outcomes. The aggregated design, however, does not identify the direction of causation between changes in these indicators.

Across the three districts, instructional leadership generally recorded high proportions of improvement, followed by professional reflection and instructional improvement, while changes in instructional quality varied more substantially. This ordering was observed directly in the reported data and forms the empirical basis for interpreting leadership as a distal condition and instructional quality as a more proximal educational process. Norman et al. (2025) emphasize the interdependence of leadership, professional development, and digital innovation in strengthening teacher competence, while Hussain et al. (2025) identify professional development as a mechanism linking transformational leadership and pedagogical innovation. The study therefore interprets the sequence school leadership → teacher professional development and reflection → instructional quality → student learning outcomes as an evidence-consistent explanatory ordering.

The difference between literacy and numeracy improvement also requires separate consideration. Across Muna, South Konawe, and North Kolaka, the proportions of schools reporting improvement in numeracy reached 74.07%, 77.65%, and 72.97%, respectively, whereas corresponding literacy improvements were 41.98%, 57.65%, and 62.16%. This pattern reinforces the separate analysis of literacy and numeracy because organizational and instructional factors may be associated with the two learning domains in different ways. Transformative pedagogical development is unlikely to influence all competencies uniformly, particularly when different domains require different instructional strategies, forms of teacher expertise, and patterns of classroom interaction (Bwembya et al., 2024; Sadiyah, 2026).

The findings also have implications for understanding educational transformation in the digital era. Schools' capacity to establish adaptive leadership and continuous professional learning constitutes an organizational foundation for meaningful technology integration, but technology generates instructional value only when it produces changes in teaching practice. King (2002) conceptualized educational-technology professional development as an opportunity for transformative learning among teachers, while Rajput and Sharma (2025) emphasize the need for continuously evolving professional-development systems in digital educational environments. Anwar (2025) further demonstrates the mediating relevance of digital competence in the relationship between transformational leadership and teacher performance, highlighting the importance of treating digitalization as a capability-building process rather than merely an infrastructural condition.

The overall evidence shows a consistent empirical ordering across organizational, instructional, and learning indicators. High levels of instructional leadership and professional reflection coexist with more heterogeneous instructional-quality and student-achievement indicators, indicating that organizational strength does not automatically correspond to equivalent classroom or learning performance. The cross-district improvement data show the same general discontinuity, although its magnitude differs by district and learning domain. This interpretation is consistent with Sliwka et al. (2024), Ghamrawi et al. (2024), and Hussain et al. (2025), who emphasize professional and instructional processes through which leadership environments are associated with educational outcomes.

The findings are descriptive and associational rather than causal. National data indicate that junior secondary education recorded a literacy competency rate of 76.49% and a numeracy competency

rate of 70.81%, while district-level evidence shows that high ratings of instructional leadership and professional reflection do not necessarily coincide with equivalently high instructional quality or learning outcomes. Within the scope of the available data, the study demonstrates that strong organizational-process indicators can coexist with lower classroom and achievement indicators and that improvement is uneven across these dimensions. The sequential interpretation is therefore based on observed cross-indicator patterns and does not imply that statistical mediation or causal transmission was estimated from the aggregated reports.

The three sets of findings collectively establish a multidimensional pattern of educational quality in Indonesian junior secondary education. Student literacy performs comparatively well at the national level, whereas numeracy remains below the Good-category threshold; district-level evidence shows substantially stronger instructional-leadership and professional-reflection indicators than instructional-quality and learning-outcome indicators; and improvement patterns show that progress in leadership and professional processes does not occur at the same rate as progress in classroom instruction. Across these analytical layers, the observed configuration is consistent with interpreting leadership as a distal organizational resource associated with student outcomes through teachers' professional capacity and the quality of classroom instruction (Norman et al., 2025; Ghamrawi et al., 2024; Sliwka et al., 2024).

The integrated results establish three empirical points. First, junior secondary literacy exceeded the Good threshold, whereas numeracy remained in the Moderate category. Second, in all three districts, the proportions of schools classified as Good in instructional leadership and professional reflection were higher than the corresponding proportions for instructional quality and student achievement. Third, improvement rates for leadership and reflection generally exceeded improvement in instructional quality, while literacy and numeracy followed different trajectories. Together, these results support a mechanism-oriented interpretation in which organizational leadership is associated with student learning through intermediate professional and instructional processes, with the strength and timing of those relationships differing across districts and learning domains. This evidence-based interpretation constitutes the principal substantive contribution of the study to educational leadership and school-improvement research.

CONCLUSION

The analysis identified recurring differences between organizational and professional-process classifications, instructional quality, and student learning outcomes in the selected Indonesian education indicators. At the national level, 76.49% of junior secondary students attained minimum literacy competency, placing the reported result in the Good category, whereas numeracy attainment reached 70.81% and remained Moderate, a difference of 5.68 percentage points. Across Muna, South Konawe, and North Kolaka, the proportions of junior secondary schools classified as Good in instructional leadership and teacher reflection and instructional improvement exceeded the corresponding proportions for instructional quality, literacy, and numeracy. The improvement distributions also exhibited uneven patterns, including differences between literacy and numeracy across districts. These findings establish descriptive discrepancies in the prevalence of favorable classifications rather than demonstrating that leadership or professional reflection directly influences student achievement. The conceptual ordering of leadership, professional learning, instructional quality, and learning outcomes remains a useful interpretive proposition, but its mediating or causal structure was not empirically tested.

The findings suggest that school-improvement planning should not rely exclusively on favorable instructional leadership or teacher-reflection classifications as evidence of satisfactory classroom and learning conditions. The substantial differences between these indicators and instructional-quality classifications justify closer examination of how organizational improvement initiatives correspond to actual classroom practices. The distinction between literacy and numeracy attainment also supports differentiated diagnostic priorities rather than treating student competency improvement as a uniform outcome. These implications are grounded in the reported descriptive patterns, whereas recommendations concerning collaborative professional learning, digital pedagogy, and particular leadership interventions remain informed by the broader literature rather than by intervention effects established in this analysis. The study contributes an indicator-based comparative approach for identifying areas of educational performance that require further investigation and more closely aligned improvement strategies.

Several methodological limitations restrict the interpretation and generalizability of these findings. The analysis relied on aggregated secondary data, included only three purposively selected districts, and compared national student attainment percentages with district-level school classifications that have different units of analysis. Teacher reflection and instructional improvement served as a limited observable component of professional development, while digital competence, technology integration, and instructional innovation were not independently assessed. The absence of matched school-level data, contextual covariates, and formal association or mediation testing precluded conclusions about the direction or magnitude of relationships between the examined indicators. Future research should incorporate longitudinal school-level observations, direct measures of teacher professional learning and instructional practices, and appropriate multivariate methods to examine whether changes in leadership and professional-reflection conditions precede or accompany subsequent improvements in instructional quality and student learning.

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