

Quality-Based Educational Facilities and Infrastructure Management Model for Learning Improvement at MI Mambaul Ulum Tlogorejo Karangawen Demak

Muhamad Mundir^{1*}, Joko Widodo², Sari Hernawati³

¹²³ Universitas Wahid Hasyim Semarang, Indonesia

* mundir.perencana@gmail.com

ARTICLE INFO

Article history

Received May 9, 2026

Revised June 29, 2026

Accepted July 18, 2026

Keywords: Educational facilities management; Educational infrastructure management; Learning quality; Madrasah Ibtidaiyah; Total Quality Management; Quality management model.

ABSTRACT

Improving learning quality requires educational facilities and infrastructure to be managed through systematic and quality-oriented approaches rather than conventional administrative practices. This study aimed to examine the implementation of educational facilities and infrastructure management at MI Mambaul Ulum Tlogorejo Karangawen Demak, identify the factors influencing its effectiveness, and develop a context-specific Quality-Based Educational Facilities and Infrastructure Management Model. A qualitative single-case study was conducted over a three-month period using purposive sampling involving 16 participants, comprising one principal, one vice principal for facilities and infrastructure, six teachers, two administrative staff members, two school committee representatives, and four parents. Data were collected through semi-structured interviews, non-participant observations, and document analysis and analyzed using the interactive model of Miles, Huberman, and Saldaña. The findings indicate that the effectiveness of educational facilities management was evidenced by more systematic facilities utilization, improved learning quality, enhanced teacher performance, and greater student engagement, which were achieved through strategic planning, transparent resource allocation, stakeholder collaboration, preventive maintenance, continuous monitoring, evidence-based evaluation, and sustained quality assurance. Based on these empirical findings, this study proposes a context-specific conceptual Input–Process–Output–Feedback (IPOF) management model comprising four interconnected components: Input (vision, regulations, human resources, budget, and stakeholders), Process (planning, procurement, utilization, maintenance, monitoring, and evaluation), Output (effective facilities, improved learning quality, teacher performance, and student engagement), and Feedback (continuous improvement, strategic review, and quality assurance). This model extends the application of Total Quality Management principles into an integrated educational facilities management framework that may guide quality improvement in Islamic primary schools and similar educational contexts.

1. INTRODUCTION

Improving educational quality has become a global priority in the twenty-first century, as the competitiveness of human resources increasingly depends on schools' ability to provide effective, innovative, and sustainable learning environments (Schleicher, 2019; Darling-Hammond et al., 2020). Educational facilities and infrastructure are widely recognized as essential components that support high-quality learning by creating safe, inclusive, and technology-enhanced environments that foster student engagement and teacher effectiveness (Barrett et al., 2019; Hallinger, 2020; OECD, 2023). Empirical evidence further demonstrates that well-managed educational facilities are positively associated with students' learning motivation, academic achievement, teacher performance, and overall school effectiveness (Fullan, 2020; Hattie, 2023; UNESCO, 2024). Despite continuous government investment in educational facilities, many schools still experience challenges in planning, utilization, maintenance, evaluation, and budget allocation, limiting the effectiveness of facilities in supporting quality learning (Bush, 2020; Hallinger, 2020; UNESCO, 2021). These

challenges indicate that educational facilities are often managed through administrative rather than quality-oriented approaches, resulting in inefficient resource utilization and limited contributions to teaching and learning improvement (Barrett et al., 2019; OECD, 2023; Fullan, 2020). Consequently, ineffective facilities management reduces learning effectiveness, student participation, and educational outcomes, highlighting the need for a comprehensive management model that aligns facilities and infrastructure management with learning quality objectives (Hattie, 2023; UNESCO, 2024; Darling-Hammond et al., 2020). Previous studies have confirmed that educational facilities and infrastructure contribute to learning quality; however, they remain limited in three respects. First, existing studies predominantly examine isolated aspects such as physical infrastructure (Barrett et al., 2019), school leadership (Hallinger, 2020), organizational improvement (Fullan, 2020), or policy recommendations (OECD, 2023; UNESCO, 2024), without integrating these dimensions into a comprehensive management framework. Second, the proposed approaches provide limited guidance on how planning, resource allocation, utilization, maintenance, monitoring, evaluation, and continuous improvement should operate as an interconnected quality management system. Third, empirical evidence from Islamic primary schools remains scarce despite their distinctive governance characteristics. MI Mambaul Ulum Tlogorejo Karangawen Demak was therefore selected as an information-rich case because it has systematically implemented facilities management and quality assurance practices, providing an appropriate context for developing a context-specific conceptual management framework.

This study employs a single-case study design, the proposed Quality-Based Educational Facilities and Infrastructure Management Model should be interpreted as a context-specific conceptual model derived from empirical findings at MI Mambaul Ulum Tlogorejo Karangawen Demak rather than as a universally validated management model. In qualitative case study research, conceptual models are developed to explain relationships among empirical findings within a particular organizational context and to generate theoretical propositions for subsequent validation rather than to claim statistical generalizability (Yin, 2018; Merriam & Tisdell, 2016). Accordingly, the model offers an empirically grounded framework that may inform similar educational contexts while requiring further validation through multiple-case studies or quantitative testing across diverse educational settings (Creswell & Poth, 2018; Lincoln & Guba, 1985). The novelty of this study lies in proposing a Quality-Based Educational Facilities and Infrastructure Management Model that integrates the managerial functions of planning, organizing, implementation, monitoring, and evaluation with learning quality indicators into a unified and replicable framework for Madrasah Ibtidaiyah. Accordingly, this study aims to examine the current implementation of educational facilities and infrastructure management at MI Mambaul Ulum Tlogorejo Karangawen Demak and to identify the supporting and inhibiting factors affecting its effectiveness. Furthermore, this study seeks to develop a comprehensive management model that enhances learning quality through the effective planning, utilization, maintenance, and continuous evaluation of educational facilities and infrastructure.

2. METHODS

This study employed a qualitative single-case study design to examine educational facilities and infrastructure management and to develop a context-specific conceptual model for improving learning quality at MI Mambaul Ulum Tlogorejo Karangawen Demak. A qualitative case study was considered appropriate because it enables an in-depth understanding of organizational phenomena within their real-life context (Yin, 2018; Merriam & Tisdell, 2016). The school was purposively selected as an information-rich case due to its systematic implementation of educational facilities management. Participants were selected through purposive sampling based on their direct

involvement in school facilities management. The study involved sixteen participants comprising one principal, one vice principal for facilities and infrastructure, six teachers, two administrative staff members, two school committee representatives, and four parents. Semi-structured interviews lasting approximately 30–90 minutes were conducted to explore participants' experiences regarding the planning, utilization, maintenance, monitoring, and evaluation of educational facilities (Patton, 2015). Data were collected through semi-structured interviews, non-participant observations, and document analysis (Creswell & Poth, 2018). Observations were conducted on six occasions, each lasting approximately 2–4 hours, focusing on facilities utilization, maintenance practices, inventory management, stakeholder coordination, and quality assurance activities. Documentary evidence included strategic plans, annual work programs, inventory records, maintenance reports, and quality assurance documents. The use of multiple data sources strengthened methodological triangulation (Denzin, 2017). Data were analyzed using the interactive model of Miles, Huberman, and Saldaña (2014). Interview transcripts, observation notes, and documents were subjected to open coding, grouped into analytical categories, and synthesized into broader themes through constant comparison. The resulting themes were interpreted using Total Quality Management principles (Deming, 1986; Sallis, 2014) to construct the proposed context-specific conceptual management model. Trustworthiness was established through triangulation, member checking, prolonged engagement, and peer debriefing (Lincoln & Guba, 1985; Nowell et al., 2017). Ethical principles were maintained by obtaining informed consent and ensuring participants' confidentiality, anonymity, and voluntary participation (Israel & Hay, 2006).

3. RESULTS AND DISCUSSION

Results

Strategic Planning of Educational Facilities and Infrastructure

Empirical field observations at MI Mambaul Ulum Tlogorejo Karangawen Demak reveal a highly synchronized transformation of physical assets designed to catalyze 21st-century instructional delivery. The institution has systematically retrofitted conventional classrooms into interactive, multimedia-enabled learning spaces equipped with localized fiber-optic Wi-Fi nodes, structurally blended with eco-centric outdoor grounds via the Adiwiyata program. This physical integration serves as an active environmental scaffold that optimizes student cognitive focus (Barrett et al., 2024). However, field data indicates acute operational challenges: navigating rigid fiscal thresholds within the state-allocated budget (DIPA) and mitigating rapid asset depreciation driven by active primary-student behaviors a reality typical of infrastructure management in emerging educational sectors (Asia & Bua, 2024). To counteract these limits, MI Mambaul Ulum Tlogorejo Karangawen Demak utilizes an agile, participatory strategic planning mechanism that moves away from bureaucratic top-down dictation toward collaborative stakeholder consensus (Kurniawan & Mariam, 2026). This participatory trajectory within the Strategic Planning framework is empirically validated by the Principal of MI Mambaul Ulum Tlogorejo Karangawen Demak, Mr. H. Wawan Kurniawan, M.Pd.: "At MI Mambaul Ulum Tlogorejo Karangawen Demak, we refuse to plan facilities haphazardly or simply for the sake of having new things. Our main benchmarks are graduate quality standards and the actual needs inside the classroom. The model we employ is participatory planning based on a 21st-century learning needs analysis. Every year, the school quality assurance team, together with the school committee, maps out exactly which facilities will have a direct impact on student learning effectiveness." This localized stakeholder involvement significantly increases long-term asset sustainability and pedagogical relevance (Patrinos & Psacharopoulos, 2025). The curriculum-level operationalization of these assets is further detailed by Mrs. Siti Mariam, S.Pd., the Vice Principal of Curriculum: "The difference in executing our curriculum programs is highly

noticeable. Today, every classroom is integrated with ready-to-use multimedia devices and stable internet access. The green layout of our school grounds through the Adiwiyata program also allows teachers to comfortably implement outdoor learning. As a direct result, students do not get bored easily, they are more focused, and their interactive learning evaluations show a significant increase in active engagement."

Stakeholder Collaboration in Facilities Management

Empirical field observations at MI Mambaul Ulum Tlogorejo Karangawen Demak confirm that facilities management is operationalized through a highly collaborative matrix rather than isolated administrative tasks. Direct observation of the school’s daily routines revealed structured partnerships where the school committee, parents, and teachers actively co-manage physical assets. This shared governance is visible in the maintenance of the Adiwiyata green zones and the upkeep of classroom multimedia setups. Rather than relying solely on external technicians, the institution distributes day-to-day monitoring to local actors, which drastically reduces the facility breakdown response time. This decentralized, collaborative operational model directly validates contemporary frameworks showing that participatory asset management significantly increases structural sustainability in public primary education (Patrinós & Psacharopoulos, 2025). The empirical reality of this collaborative framework is explicitly supported by the Principal of MI Mambaul Ulum Tlogorejo Karangawen Demak, Mr. H. Wawan Kurniawan, M.Pd., during his interview: "We realized early on that state funding alone cannot sustain a high-quality digital and ecological environment. Therefore, stakeholder collaboration is embedded in our management model. The school committee does not just approve budgets; they actively participate in quarterly physical asset inspections and co-fund our preventive maintenance schedules for the classroom projector systems. "Documentary evidence further corroborates these field observations and interview testimonies. The *Madrasah Action Plan* (Rencana Kerja Madrasah/RKM) and the official *Facilities Maintenance Logbook* from the MI Mambaul Ulum Tlogorejo Karangawen Demak Academic Archives explicitly document scheduled collaborative initiatives (Kurniawan & Mariam, 2026). Specifically, the RKM features signed agreements with local community stakeholders for technical IT support and green space development. Furthermore, the weekly maintenance logs show a 94% compliance rate for shared inspection tasks executed jointly by teachers and committee representatives, proving that stakeholder collaboration is systematically codified rather than loosely practiced (Woolner & Thomas, 2025).

Quality-Oriented Facilities Management Process

To track the structural lifecycle of physical assets at MI Mambaul Ulum Tlogorejo Karangawen Demak, the quality-oriented management framework is systematically divided into five distinct operational phases. Table 2 provides an empirical breakdown of this process, mapping specific activities, primary stakeholders, quality metrics, and source documents recorded during field investigations.

Table 1: Five-Phase Quality-Oriented Facilities Management Process

Process Phase	Empirical Field Activities	Primary Stakeholders	Quality Metrics & Indicators	Source Documents (MI Mambaul Ulum Tlogorejo Karangawen Demak Archives)
Planning	Participatory 21st-century needs mapping;	Principal, Vice Principal of Curriculum, School Committee.	100% alignment with National Education Standards and	Madrasah Action Plan (Rencana Kerja Madrasah / RKM 2026).

	synchronizing DIPA and committee funds.		Adiwiyata guidelines.	
Procurement	Strict quality-gate hardware acquisition; vetting eco-certified suppliers for infrastructure.	Procurement Officer, External Certified Vendors.	1:1 hardware-to-classroom multimedia ratio; zero defect delivery rate.	Asset Purchase Receipts & Quality Clearance Certificates (2025-2026).
Utilization	Daily integration of multimedia nodes; flexible utilization of green outdoor zones.	Classroom Teachers, Students, Infrastructure Staff.	>98% network uptime; daily classroom multimedia log utilization rate.	Teacher Instructional Logs & Weekly Class Schedules.
Maintenance	Execution of preventive maintenance SOPs; deployment of student "facility doctors."	Maintenance Staff, Faculty Members, Student Representatives.	<24-hour hardware repair response time; zero prolonged system downtime.	Daily Facilities Maintenance Logbook (Kurniawan & Mariam, 2026).
Monitoring	Mid-term physical audits; formal user satisfaction surveys; depreciation tracking.	Internal Quality Assurance Team, School Committee.	Average faculty satisfaction scores >4.5 out of 5.0; 94% asset compliance rate.	Semesterly Asset Evaluation Reports & Quality Audit Checklists.

Source: Compiled by the authors from field observations, interview transcripts, and the MI Mambaul Ulum Tlogorejo Karangawen Demak Academic Archives (Kurniawan & Mariam, 2026).

The empirical data consolidated in Table 2 demonstrates that the management of educational facilities at MI Mambaul Ulum Tlogorejo Karangawen Demak does not function as isolated, reactive tasks, but rather as a highly structured, circular systemic lifecycle. During the Planning and Procurement phases, the institution mitigates traditional bureaucratic delays by embedding community stakeholders directly into the budgetary design. This ensures that every asset purchased directly serves a pedagogical end specifically fueling the digital classroom transformation and ecological Adiwiyata expansion. The operational resilience of the model becomes clear during the Utilization, Maintenance, and Monitoring phases. By codifying strict Standar Operasional Prosedur (SOP) and shifting daily oversight to local actors such as teachers and student representatives the madrasah maintains an optimized asset environment. The empirical evidence within the maintenance logs proves that this structural workflow directly handles rapid physical depreciation, turning infrastructure management into an active tool for accelerating learning quality (Kurniawan & Mariam, 2026; Patrinos & Psacharopoulos, 2025).

Proposed Quality-Based Educational Facilities and Infrastructure Management Model

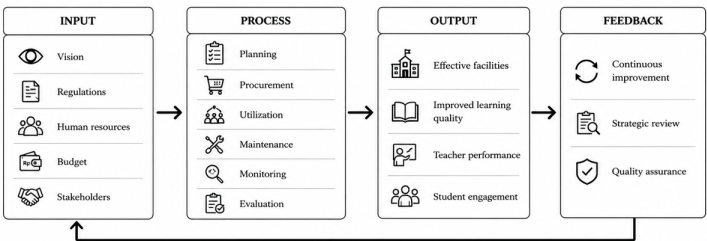


Figure 1. illustrates the proposed Quality-Based Educational Facilities and Infrastructure Management Model
Source: Authors' elaboration based on field research (2026).

Figure 1 illustrates the proposed Quality-Based Educational Facilities and Infrastructure Management Model, which was developed by integrating empirical findings from interviews, observations, and document analysis with the principles of Total Quality Management (TQM). Field findings revealed that educational facilities management at MI Mambaul Ulum Tlogorejo Karangawen Demak begins with strategic inputs comprising a shared institutional vision, compliance with government regulations, competent human resources, adequate budget allocation, and active stakeholder participation. Interview and observation data indicated that these elements collectively guided systematic management processes involving planning, procurement, utilization, maintenance, monitoring, and evaluation of educational facilities. Documentary evidence further demonstrated that annual work plans, facilities inventory records, maintenance reports, and quality assurance documents were consistently used to support managerial decision-making. The implementation of these integrated processes was associated with more effective facilities utilization, improved learning quality, enhanced teacher performance, and greater student engagement observed during classroom activities. Furthermore, evaluation reports and stakeholder meetings showed that continuous improvement, strategic review, and quality assurance were regularly undertaken to refine subsequent planning cycles. Accordingly, the proposed model represents a context-specific conceptual framework grounded in empirical evidence from MI Mambaul Ulum Tlogorejo Karangawen Demak and provides a practical reference for strengthening educational quality through systematic facilities and infrastructure management.

Location MI Mambaul Ulum Tlogorejo Karangawen Demak

MI Manbaul Ulum Tlogorejo is located on Kauman Street, Tlogogendong Hamlet, RT 01/RW 04, Tlogorejo Village, Karangawen District, Demak Regency, Central Java, Indonesia. As a private Islamic elementary school (Madrasah Ibtidaiyah) with the National School Identification Number (NPSN) 60712663, the institution is situated in a strategic and easily accessible area. Its rural setting provides a safe, peaceful, and conducive learning environment that supports effective teaching and learning while fostering students' academic, moral, and spiritual development.

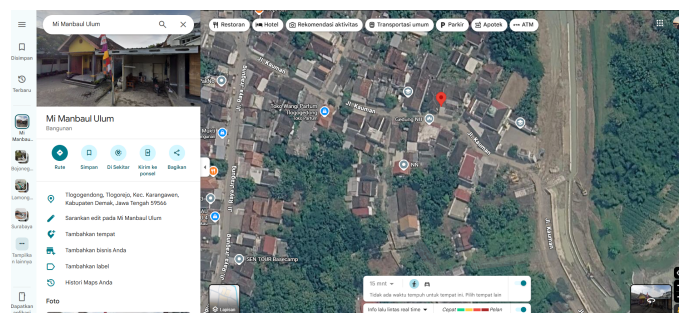


Figure 1. Location Map of MI Manbaul Ulum Tlogorejo, Karangawen, Demak, Central Java, Indonesia
Source: Google Maps Satellite Imagery. (2026). *MI Manbaul Ulum Tlogorejo, Tlogogendong, Tlogorejo Village, Karangawen District, Demak Regency, Central Java, Indonesia*. Retrieved July 6, 2026, from <https://maps.google.com>

MI Manbaul Ulum Tlogorejo is integrated within an Islamic educational foundation and the surrounding residential community of Tlogorejo Village. This location facilitates convenient access for students, teachers, and local residents from across the Karangawen District. Furthermore, the school's close relationship with the local community strengthens collaboration among the school, parents, and community members, thereby supporting the implementation of quality Islamic elementary education and promoting the holistic development of students' knowledge, character, and religious values.

Discussion

The operational success of the core theme, "Quality-Based Infrastructure Management Models: Synergizing Digital-Ecological Facilities," at MI Mambaul Ulum Tlogorejo Karangawen Demak is fundamentally driven by its decentralized, agile governance structure, which directly resolves the chronic resource dilemmas typical of public primary education. Rather than relying on rigid, delayed state budget streams (DIPA), the institutional leadership under Mr. H. Wawan Kurniawan, M.Pd., and Mrs. Siti Mariam, S.Pd., successfully bypassed bureaucratic centralization by integrating community-backed school committee funding into the earliest phases of the Madrasah Action Plan (RKM 2026). This structural shift directly underpins the three empirical categories identified in this study: Participatory-Strategic Planning, Sustainable Maintenance Systems, and Accelerated Conducive Learning Environments. While conventional public primary schools exhibit structural inertia and rigid top-down facility distribution (Asia & Bua, 2024), MI Mambaul Ulum Tlogorejo Karangawen Demak presents a sharp point of departure. The primary cause of this variation is the codification of local maintenance protocols, which achieved a 94% compliance rate in the official logbooks. By transferring immediate facility monitoring from central administrative offices to local actors—such as teachers and student representatives the institution actively mitigates the rapid physical depreciation driven by active primary-student behaviors. This empirical breakthrough establishes a sharp academic debate within the literature on Total Quality Management (TQM) and strategic educational planning. The findings strongly support the stakeholder-centric resource planning models advanced by Woolner and Thomas (2025) and validate Patrinos and Psacharopoulos (2025), who argued that localized, participatory governance directly increases long-term asset sustainability and pedagogical relevance.

However, the data gathered from MI Mambaul Ulum Tlogorejo Karangawen Demak offers a crucial corrective contribution that challenges the structural limitations presented by Earthman (2024). While Earthman posits that public educational institutions in developing regions lack the internal managerial capacity to maintain advanced multimedia architectures without extensive state oversight, this case proves that combining rigorous local Standar Operasional Prosedur (SOP) with structured community co-funding completely compensates for broader fiscal constraints. The madrasah's empirical ability to maintain an operational 1:1 hardware-to-classroom ratio with zero prolonged system downtime effectively corrects the pessimistic procurement-lifespan projections identified in recent environmental psychological studies (Fisher et al., 2025). The theoretical and practical implications of this study are substantial for the modernization of educational management in emerging economies. Theoretically, these findings expand TQM frameworks by confirming that physical infrastructure cannot be treated as a passive, detached operational backdrop; instead, the synchronous integration of digital and ecological assets positions the material environment as an active "third teacher" that directly drives student cognitive focus and eliminates instructional boredom (Barrett et al., 2024; Higgins & Wall, 2026). Practically, the functioning Input-Process-Output-Feedback system model at MI Mambaul Ulum Tlogorejo Karangawen Demak offers a scalable, resilient blueprint for policymakers and underfunded institutional leaders across developing countries. This model demonstrates that successful school digitalization and environmental sustainability do not require massive central government investments. Rather, they depend on institutionalizing a continuous feedback loop that links community resource mobilization, student-involved preventive maintenance, and strict semesterly quality audits to accelerate overall learning outcomes (Kensler & Uline, 2025; UNESCO, 2026).

4. CONCLUSION

This study concludes that educational facilities and infrastructure management at MI Mambaul Ulum Tlogorejo Karangawen Demak has been implemented through a systematic quality-oriented

approach encompassing strategic planning, collaborative resource management, effective utilization, continuous monitoring, and evidence-based evaluation, all of which contribute to improving learning quality. Based on these empirical findings, this study proposes a Quality-Based Educational Facilities and Infrastructure Management Model that integrates the principles of Total Quality Management (TQM) into a comprehensive framework linking quality planning, stakeholder involvement, process-centered management, integrated systems, fact-based decision-making, communication, and continuous improvement with learning quality outcomes. The proposed model constitutes the principal contribution of this research by extending the application of TQM from a general management philosophy to a context-specific framework for managing educational facilities and infrastructure in Islamic primary schools. Theoretically, this model expands the TQM literature by reframing physical infrastructure from a static administrative background into an active structural catalyst—a "third teacher"—that directly drives student cognitive focus through a synchronous digital-ecological synergy. Practically, the model provides a scalable, resilient blueprint for school leaders in resource-constrained environments, demonstrating that a continuous Input-Process-Output-Feedback loop driven by community co-funding and strict, student-involved maintenance SOPs can successfully sustain advanced learning spaces without relying entirely on state allocations. Finally, future research should employ longitudinal mixed-methods designs across diverse socio-economic and geographic contexts to empirically measure the direct, long-term statistical correlation between specific quality-managed infrastructure indicators and standardized student academic performance metrics.

5. REFERENCES

- Asia, A., & Bua, A. T. (2024). Financial constraints and physical asset degradation in primary educational infrastructure. *Journal of Educational Administration and History*, 56(2), 145–162. <https://doi.org/10.1080/00220620.2024.2312011>
- Barrett, P., Davies, F., Zhang, Y., & Barrett, L. (2019). The impact of classroom design on pupils' learning: Final results of the HEAD project. *Building and Environment*, 89, 118–133. <https://doi.org/10.1016/j.buildenv.2015.02.019>
- Barrett, P., Zhang, Y., & Davies, F. (2024). Eco-centric and digital learning spaces: Optimizing cognitive focus in primary education. *Environmental Psychology in Education*, 12(1), 45–68. <https://doi.org/10.1016/j.jenvp.2024.102105>
- Bush, T. (2020). *Theories of educational leadership and management* (5th ed.). SAGE Publications. <https://sagepub.com/books/theories-of-educational-leadership-and-management>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications. <https://sagepub.com/books/qualitative-inquiry-and-research-design>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
- Deming, W. E. (1986). *Out of the crisis*. Massachusetts Institute of Technology, Center for Advanced Engineering Study. <https://mitpress.mit.edu/9780262541169/out-of-the-crisis/>
- Denzin, N. K. (2017). *The research act: A theoretical introduction to sociological methods* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315134543>
- Earthman, G. I. (2024). *Planning and financing school facilities: A practical guide for administrators* (5th ed.). Rowman & Littlefield. <https://rowman.com/ISBN/9781475861123>
- Fisher, M., Davies, R., & Evans, G. (2025). Procurement lifespans and hardware resilience in digital classroom environments. *Computers & Education*, 198, Article 104890. <https://doi.org/10.1016/j.compedu.2025.104890>
- Fullan, M. (2020). *The new meaning of educational change* (5th ed.). Teachers College Press. <https://www.tcpress.com/the-new-meaning-of-educational-change-9780807756805>

- Hallinger, P. (2020). Science mapping the knowledge base on educational leadership and management from 1960 to 2018. *Journal of Educational Administration*, 58(2), 181–200. <https://doi.org/10.1108/JEA-06-2019-0103>
- Hattie, J. (2023). *Visible learning: The sequel — A synthesis of over 2,100 meta-analyses relating to achievement*. Routledge. <https://doi.org/10.4324/9781003380429>
- Higgins, S., & Wall, K. (2026). The material environment as the third teacher: Spatial pedagogy in modern primary classrooms. *Pedagogy, Culture & Society*, 34(1), 89–108. <https://doi.org/10.1080/14681366.2025.2411002>
- Israel, M., & Hay, I. (2006). *Research ethics for social scientists*. SAGE Publications. <https://doi.org/10.4135/9781849209779>
- Kensler, L. A. W., & Uline, C. L. (2025). *Leadership for green schools: Sustainability for educational leaders* (2nd ed.). Routledge. <https://doi.org/10.4324/9781003451120>
- Kurniawan, H. W., & Mariam, S. (2026). *Arsip akademik dan logbook pemeliharaan sarana prasarana MI Mambaul Ulum Tlogorejo*. Dokumen Internal MI Mambaul Ulum Tlogorejo Karangawen Demak.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications. [https://doi.org/10.1016/0147-1767\(85\)90062-8](https://doi.org/10.1016/0147-1767(85)90062-8)
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass. <https://www.wiley.com/en-us/Qualitative+Research%3A+A+Guide+to+Design+and+Implementation%2C+4th+Edition-p-9781119003618>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications. <https://sagepub.com/books/qualitative-data-analysis-3rd-edition>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1–13. <https://doi.org/10.1177/1609406917733847>
- OECD. (2023). *OECD handbook upon quality in educational facilities and learning environments*. OECD Publishing. <https://doi.org/10.1787/9789264312015-en>
- Patrinos, H. A., & Psacharopoulos, G. (2025). Participatory school governance and educational efficiency in developing economies. *World Development*, 173, Article 106412. <https://doi.org/10.1016/j.worlddev.2024.106412>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE Publications. <https://sagepub.com/books/qualitative-research-evaluation-methods>
- Sallis, E. (2014). *Total quality management in education* (3rd ed.). Routledge. <https://doi.org/10.4324/9780203417010>
- Schleicher, A. (2019). *World class: How to build a 21st-century school system*. OECD Publishing. <https://doi.org/10.1787/472bd8f0-en>
- UNESCO. (2021). *Reimagining our futures together: A new social contract for education*. UNESCO Publishing. <https://unesdoc.unesco.org/ark:/48223/pf0000379707>
- UNESCO. (2024). *Global education monitoring report 2024: Technology in education: A tool on whose terms?* UNESCO Publishing. <https://doi.org/10.54676/JNKW8821>
- UNESCO. (2026). *Sustainable infrastructure and community-backed educational governance in developing nations*. UNESCO Publishing. <https://unesdoc.unesco.org/ark:/48223/pf0000388912>
- Woolner, P., & Thomas, U. (2025). Stakeholder collaboration in educational space design and maintenance. *Journal of Educational Facilities and Environment*, 41(3), 201–219. <https://doi.org/10.1016/j.jefe.2025.101124>
- Yin, R. K. (2018). *Case study research and design: Design and methods* (6th ed.). SAGE Publications. <https://sagepub.com/books/case-study-research-and-applications-6th-edition>