

Inventory Management of Educational Facilities for Enhancing School Management Effectiveness

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Article Info

Article history:

Received 27 January 2026
Revised 28 Maret 2026
Accepted 27 April 2026

Keywords:

Inventory Management;
Educational Facilities;
School Management
Effectiveness;
Asset Management;
Educational Administration;

ABSTRACT

This study examines the dual curriculum as an integrative model for improving educational quality in response to the growing need for adaptive and holistic learning frameworks. Using a Systematic Literature Review (SLR) guided by PRISMA 2020 procedures, this study synthesizes findings from 43 selected articles retrieved from Scopus, Google Scholar, and the Directory of Open Access Journals (DOAJ), covering diverse educational contexts including Islamic boarding schools, higher education, and vocational education. The analysis conceptualizes the dual curriculum as a multidimensional framework that integrates curriculum design, pedagogical practices, institutional leadership, and policy alignment. The findings indicate that dual curriculum implementation is associated with improvements in academic competence, critical thinking, social literacy, and learners' readiness to meet evolving societal and workforce demands. These outcomes are influenced by key enabling factors such as leadership commitment, teacher capacity, and institutional support. However, several challenges persist, including increased curricular load, tensions between differing knowledge paradigms, socio-cultural resistance, and limitations in assessment practices. This study contributes to the field of educational management by offering a synthesized conceptual model that positions the dual curriculum as a cross-contextual and adaptive integrative framework. It also highlights the importance of systemic alignment across educational dimensions and underscores the need for more rigorous comparative and empirical research to strengthen the evidence base of dual curriculum implementation.

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INTRODUCTION

Educational facilities and infrastructure inventory management plays a crucial role in supporting the effectiveness of school management, particularly in ensuring the efficient and sustainable utilization of educational resources (Yanto, 2025; Wawire et al., 2026). Effective inventory systems enable schools to maintain accurate asset data, which serves as a foundation for planning, budgeting, monitoring, and decision-making processes (Nguyen et al., 2023; Ahmad & Ismail, 2022). In this context, inventory management is not merely an administrative function but a strategic component of educational governance that directly influences institutional performance and accountability (Fullan, 2016; Mordhorst & Jenert, 2023).

However, despite its importance, many secondary education institutions continue to face challenges in implementing effective inventory management systems. Previous studies indicate that inventory practices are often characterized by manual recording, fragmented data systems, and limited integration across administrative units (Winarsih & Santoso, 2025; Purnamasari et al., 2025; Feriyanto & Puspitasari, 2024).

These limitations reduce data accuracy and hinder evidence-based decision-making, ultimately affecting the effectiveness of school management (Schildkamp, 2019; Nashirah et al., 2025). Similar challenges are observed in Islamic secondary education institutions, including madrasah aliyah, where the complexity of asset management is relatively high due to the diversity of facilities and institutional demands (Turmidzi, 2021; Jannah et al., 2025).

From a theoretical perspective, inventory management in education encompasses systematic processes such as recording, classification, maintenance, monitoring, and control of institutional assets (Purnamasari et al., 2025; Sariwardani et al., 2025). Empirical evidence suggests that schools with standardized and integrated inventory systems tend to demonstrate higher efficiency, transparency, and accountability in resource management (Silaban & Hutasoit, 2025; Nguyen et al., 2023). Furthermore, the integration of information technology into inventory systems has been shown to significantly improve data accuracy and managerial effectiveness (Feriyanto & Puspitasari, 2024; Kamilah et al., 2024). However, the successful implementation of digital inventory systems is often constrained by limited human resource capacity, inadequate training, and insufficient institutional support (Jannah et al., 2025; Rizih, 2025).

In addition, leadership and organizational coordination play a critical role in ensuring the effectiveness of inventory management. Studies have highlighted that strong leadership from school principals, combined with effective collaboration among administrative staff and teachers, significantly enhances the quality of inventory practices and institutional performance (Sibarani et al., 2024; Rashid et al., 2026). Despite these findings, existing research has rarely examined the direct relationship between inventory management practices and school management effectiveness, particularly within the context of Islamic secondary education institutions. This gap indicates the need for more contextually grounded empirical studies that explore how inventory systems contribute to overall school effectiveness.

Based on these gaps, this study aims to analyze the management of educational facilities and infrastructure inventory and its role in supporting school management effectiveness. Specifically, this study seeks to identify the mechanisms of inventory management practices, evaluate their alignment with modern educational management principles, and examine the supporting and inhibiting factors influencing their implementation. Furthermore, this study aims to analyze the contribution of inventory management to managerial effectiveness and provide strategic recommendations for improving inventory systems in educational institutions.

This study is grounded in the assumption that systematic and integrated inventory management has a significant influence on school management effectiveness (Amalia et al., 2025; Nguyen et al., 2023). It hypothesizes that accurate inventory data enhances planning quality and decision-making processes, standardized procedures improve operational efficiency, and the integration of information technology strengthens accountability in asset management. In addition, this study assumes that human resource competence and institutional leadership play a mediating role in determining the success of inventory management practices (Purnamasari et al., 2025; Rashid et al., 2026). Therefore, this study argues that improving the quality of inventory management is a critical prerequisite for achieving effective and sustainable school management.

METHOD

This study employed a qualitative research design with a descriptive case study approach to explore the practices of educational facilities and infrastructure inventory management and their implications for school management effectiveness. A qualitative approach was selected to enable an in-depth understanding of contextual processes, organizational dynamics, and managerial practices within the natural setting of the school (Creswell & Poth, 2018; Merriam & Tisdell, 2016).

The study was conducted at a public Islamic secondary school (madrasah aliyah) in Indonesia, selected purposively due to its institutional complexity and ongoing challenges in managing educational facilities and infrastructure. Participants were selected using purposive sampling to ensure the inclusion of key informants with direct involvement in inventory management practices. These participants included the school principal, vice principal for facilities and infrastructure, administrative staff, and selected teachers responsible for managing and utilizing educational resources.

Data were collected through multiple techniques to ensure data richness and triangulation. Semi-structured interviews were conducted to capture participants' perspectives on inventory management processes, challenges, and decision-making practices. In addition, direct observations were carried out to examine the actual implementation of inventory procedures, while document analysis was used to review inventory records, administrative reports, and institutional policies related to facilities management. The use of multiple data sources enabled methodological triangulation and enhanced the credibility of the findings (Patton, 2015).

Data analysis was conducted using an interactive and iterative process, following the principles of thematic analysis. The analysis involved several stages, including data familiarization, initial coding, category development, and theme identification to capture patterns and relationships across the data (Braun & Clarke, 2006). This approach allowed the researcher to systematically interpret how inventory management practices influence school management effectiveness.

To ensure the trustworthiness of the study, several strategies were employed, including data triangulation, member checking, and peer debriefing. These procedures were used to enhance credibility, confirmability, and consistency of the findings (Lincoln & Guba, 1985). By applying these methodological strategies, the study ensures that the findings are robust, reliable, and reflective of the actual practices of inventory management within the institutional context.

Table 1. Research Design Overview

Component	Description
Research Approach	Qualitative
Research Design	Descriptive Case Study
Research Site	Public Islamic secondary school (Madrasah Aliyah)
Sampling Technique	Purposive Sampling
Data Sources	Primary (interviews, observations); Secondary (documents)
Data Collection Methods	Semi-structured interviews, direct observation, document analysis
Data Analysis	Thematic analysis (coding, categorization, theme development)
Trustworthiness	Triangulation, member checking, peer debriefing

RESULTS AND DISCUSSION

Result

This section presents the findings of the study regarding the management of educational facilities and infrastructure inventory and its contribution to school management effectiveness. The results are derived from data collected through interviews, observations, and document analysis, which provide a comprehensive picture of how inventory management is implemented within the institutional context. The findings indicate that inventory management practices in the school are generally organized into three interconnected processes, namely planning and recording, implementation and monitoring, and the utilization of inventory data in managerial activities.

To provide a structured overview, the main findings are summarized in Table 2.

Table 2. Summary of Inventory Management Findings

Aspect	Current Practice	Strengths	Limitations	Implications
Planning & Recording	Manual recording based on annual planning	Basic system established	Not digitally integrated	Limits data accuracy and speed
Implementation	Distribution based on needs	Clear task division	Limited coordination	Affects efficiency
Monitoring	Periodic inspection	Early detection	Weak documentation	Reduces maintenance effectiveness
Utilization	Used for planning and budgeting	Supports decisions	Data not always updated	Limits optimization

The findings show that inventory planning is conducted through the identification of facility and infrastructure needs based on the school's annual work program. This process involves coordination between the school principal, vice principal for facilities and infrastructure, and administrative staff, indicating that planning activities are aligned with institutional priorities. Inventory recording is carried out manually using administrative documents that contain detailed information such as item type, quantity, condition, location, and year of acquisition. These records function as the primary source of information for tracking the availability and condition of educational resources.

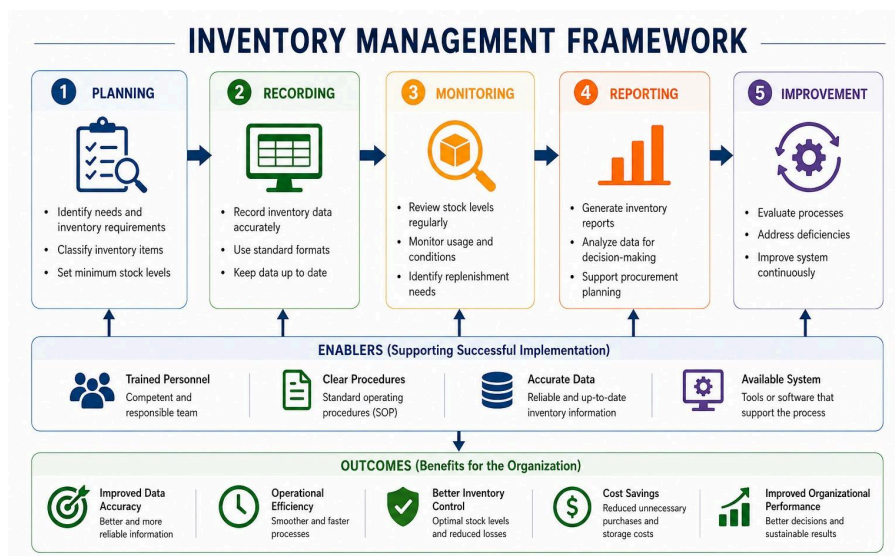


Figure 1. Inventory Management Framework

However, the findings also reveal that the recording system has not yet been digitally integrated. Data updates are not always conducted in real time, and in some cases, discrepancies are found between recorded data and actual conditions in the field. Document analysis further shows that inventory records are sometimes fragmented across different administrative units, which affects data consistency and accessibility. Despite these limitations, the existence of structured recording documents indicates that the institution has established a basic inventory management system that supports administrative needs.

In terms of implementation, the distribution of facilities and infrastructure is carried out based on the identified needs of each unit, such as classrooms, laboratories, and administrative offices. The process reflects a functional allocation system in which resources are assigned to support daily educational activities. The findings indicate that there is a clear division of responsibilities among institutional actors. The vice principal for facilities and infrastructure plays a coordinating role, administrative staff handle documentation and logistics, and teachers are responsible for utilizing and maintaining the facilities in their respective areas.

Monitoring activities are conducted periodically to assess the condition and usability of inventory items. These activities include physical inspections, identification of damaged or non-functional assets, and basic maintenance actions. The findings show that monitoring practices allow early detection of problems, which helps maintain the functionality of educational facilities. However, the results also indicate that documentation of monitoring activities is not consistently maintained. Records of inspections and maintenance actions are often incomplete, making it difficult to track changes in asset conditions over time. In addition, coordination between staff involved in monitoring is not always optimal, resulting in delays in reporting and follow-up actions.

The utilization of inventory data is primarily observed in managerial processes such as planning, budgeting, procurement, and maintenance scheduling. Inventory data are used as a reference to determine resource needs, prioritize expenditures, and allocate budgets. The findings indicate that school management relies on available inventory records to support decision-making related to the provision and maintenance of facilities. This demonstrates that inventory management plays an operational role in supporting institutional activities.

Nevertheless, the findings also show that the use of inventory data is still limited by the quality and timeliness of the data. In several cases, data are not regularly updated, which affects their reliability as a basis for decision-making. The absence of a digital system also limits the accessibility of information, as data retrieval often requires manual verification of records. Furthermore, inventory data are generally used for immediate operational purposes rather than for long-term strategic analysis. There is limited evidence of systematic data analysis to support forecasting, evaluation, or long-term planning.

Overall, the findings indicate that inventory management practices within the institution are functionally established and support basic administrative and operational needs. However, the system remains characterized by manual processes, limited integration, and inconsistencies in data management and utilization. These conditions reflect the current state of inventory management, which operates at a foundational level but has not yet fully developed into an integrated and data-driven system.

Discussion

This section provides a deeper analytical interpretation of the findings by linking the empirical results with existing theories and previous studies. While the results section describes the observed practices, this section focuses on explaining the underlying factors, implications, and broader meaning of the findings in relation to school management effectiveness.

Planning and Recording of Inventory

The findings indicate that inventory planning is conducted through the identification of facility needs based on the annual work program, with data recorded in administrative documents covering item type, quantity, condition, and location. This reflects the existence of a basic inventory management structure within the institution.

However, the reliance on manual recording systems indicates a limited level of technological integration. This condition is consistent with findings by Nguyen et al. (2023), who argue that non-digital asset management systems reduce data accuracy and delay decision-making processes. Similarly, Ahmad and Ismail (2022) highlight that manual inventory practices often result in fragmented and inconsistent data, which weakens institutional efficiency.

From a managerial perspective, the absence of an integrated system suggests that inventory planning has not yet fully adopted data-driven management principles. As Kamilah et al. (2024) and Feriyanto and Puspitasari (2024) demonstrate, digital inventory systems significantly enhance transparency, accuracy, and real-time accessibility of data. Therefore, although the institution has established a foundational planning mechanism, its effectiveness remains constrained by limited system integration. This finding implies that improving inventory recording systems is not merely a technical upgrade but a strategic step toward strengthening institutional decision-making and governance.

Implementation and Monitoring of Inventory Management

The implementation of inventory management involves the distribution of facilities to operational units and classrooms based on identified needs, with monitoring conducted by the vice principal and administrative staff. This structure reflects a clear division of roles, which is essential for organizational effectiveness. Routine monitoring practices enable early detection of damage and ensure the continued usability of facilities. However, the limited documentation of monitoring outcomes indicates a gap between operational practice and managerial accountability. According to Sibarani et al. (2024), effective school management requires systematic documentation to support transparency and continuous improvement.

Furthermore, Irwandani et al. (2024) emphasize that digital monitoring systems allow for more accurate tracking of asset conditions and maintenance needs. Without proper documentation, monitoring risks becoming procedural rather than strategic, reducing its contribution to long-term asset management. This suggests that while implementation mechanisms are functionally established, their impact is weakened by insufficient integration between monitoring and documentation systems. Strengthening this linkage is crucial for improving the sustainability and efficiency of facilities management.

Utilization of Inventory Data for School Management Effectiveness

The implementation of the dual curriculum faces several multidimensional challenges that can reduce its effectiveness. The most prominent structural challenge is the very heavy learning load. A busy schedule that combines a general curriculum, book study, and dormitory coaching often causes cognitive *overload* for students, because they have to process two types of knowledge with different epistemologies and demands in a limited time (Da'i et al., 2023; Amirudin & Rohimah, 2020). In addition, excessive load can reduce the depth of understanding because students are more oriented towards completing tasks than to the reflection process. This condition shows that without a proportionate arrangement of learning load, curriculum integration can hinder the achievement of meaningful learning goals. This suggests that temporal integration that is not balanced with an adaptive pedagogical design can be counterproductive to the quality of learning.

The findings show that inventory data are utilized in managerial processes such as procurement planning, maintenance scheduling, and budget allocation. This demonstrates that inventory management functions as an important managerial instrument in supporting institutional operations. However, the effectiveness of this function is highly dependent on the quality and timeliness of the data. As noted by Amalia et al. (2025), accurate and up-to-date inventory data are essential for improving planning quality and educational outcomes. Conversely, incomplete or outdated data may lead to suboptimal decisions and inefficient resource allocation.

This is further supported by Hasmal et al. (2025), who argue that reliable asset management systems contribute to greater accountability and organizational performance. In this context, inventory data should not

only be available but also continuously updated and systematically managed to support evidence-based decision-making. Therefore, the findings confirm that inventory management plays a critical role in determining school management effectiveness. However, its impact is contingent upon the integration, accuracy, and usability of the data within institutional decision-making processes.

Novelty and Contribution of the Study

This study offers a clear novelty by positioning educational facilities inventory management not merely as an administrative or technical activity, but as a strategic and integrative component of school management effectiveness. While previous studies have primarily focused on procedural aspects of inventory management—such as recording, classification, and maintenance (Purnamasari et al., 2025; Sariwardani et al., 2025)—this study extends the perspective by demonstrating how inventory systems interact with planning, monitoring, and decision-making processes within the institutional context.

Furthermore, this study introduces a multidimensional understanding of inventory management by highlighting the interconnection between data accuracy, system integration, leadership roles, and organizational practices. This perspective aligns with recent discussions emphasizing the importance of data-driven management and digital transformation in educational institutions (Nguyen et al., 2023; Irwandani et al., 2024), but provides a more context-specific explanation within the setting of Islamic secondary education, which remains relatively underexplored in the existing literature.

The main contribution of this study lies in its empirical evidence showing that the effectiveness of school management is closely linked to the quality of inventory data and the level of system integration. The findings demonstrate that inventory management contributes to managerial effectiveness not only through operational efficiency but also by strengthening accountability, improving decision-making accuracy, and supporting resource optimization. In this regard, the study expands the theoretical understanding of educational management by integrating inventory practices into the broader framework of institutional effectiveness.

In addition, this study provides practical contributions by offering strategic insights for improving inventory management systems in educational institutions. These include the need for digital integration, strengthening human resource capacity, and enhancing coordination between administrative and academic units. By emphasizing the importance of systematic and data-driven inventory management, this study contributes to the development of more adaptive and sustainable school management practices.

CONCLUSION

This study demonstrates that educational facilities and infrastructure inventory management plays a significant role in supporting the effectiveness of school management, as it is not merely an administrative activity but a strategic component that influences planning, implementation, monitoring, and decision-making processes within the institution. However, its effectiveness depends on the accuracy of inventory data, the level of system integration, and the capacity of institutional actors, including leadership and administrative staff. The findings also reveal several challenges, such as reliance on manual systems, limited documentation of monitoring activities, and delays in data updating, which reduce the efficiency and responsiveness of school management practices. This study contributes to a comprehensive understanding of inventory management as an integrative managerial instrument that connects resource management with institutional effectiveness, while highlighting the importance of transitioning toward digitally integrated inventory systems, strengthening human resource capacity, and improving coordination among organizational units. These findings offer practical implications for enhancing transparency, accountability, and efficiency in educational management. Future research is recommended to explore the implementation of digital inventory systems and examine their impact through comparative and longitudinal studies across different educational contexts. Overall, effective inventory management has strong potential to improve school governance, but its success depends on consistent implementation and the integration of data-driven management practices.

REFERENCES

- Amalia, T., Afifah, A. R., & Prasetyo, A. (2025). Penerapan manajemen sarana dan prasarana pendidikan di madrasah untuk meningkatkan kualitas pembelajaran. *At-Tadbir: Islamic Education Management Journal*, 3(1), 38–53. <https://doi.org/10.54437/attadbir.v3i1.2084>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706QP0630A>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE.
- Feriyanto, D., & Puspitasari, T. (2024). Perancangan sistem informasi monitoring dan pengelolaan inventaris sarana prasarana sekolah SMK N 1 Gadingrejo. *JELTec (Journal of Learning Technology)*, 2(2), 55–64.
- Hasmal, A. S., Syahra, A., & Masyhuri, M. (2025). Peran audit internal dalam meningkatkan keandalan pengelolaan aset tetap melalui efektivitas pengendalian internal pada entitas bisnis. *Journal of Economic and Business Advancement*, 1(2), 63–71.
- Irwandani, I., Solviana, M. D., & Novitasari, A. (2024). Peran teknologi dalam manajemen inventarisasi laboratorium di SMP dan SMA: Systematic literature review dengan metode PRISMA. *Oryza: Jurnal Pendidikan Biologi*, 13(2), 275–285.
- Jannah, I., Astuti, M. W., & Sofiana, I. S. (2025). Penerapan inovasi manajemen sarana dan prasarana untuk mendukung pembelajaran berbasis digital pada sekolah. *Permai: Jurnal Pendidikan dan Literasi Madrasah Ibtida'iyah*, 4(2), 86–96.
- Kamilah, B. P., Sulvi, A. R., & Putri, S. (2024). E-inventaris: Transformasi digital meningkatkan efisiensi pengelolaan barang di SMAN 3 Pariaman. *Journal of Educational Management and Strategy*, 3(1), 50–61.
- Kobandaha, F., Annas, A. N., Maliki, P. L., & Gamar, N. (2025). Manajemen pendidikan Islam berbasis artificial intelligence di era digital: Sebuah tinjauan literatur. *RIGGS: Journal of Artificial Intelligence and Digital Business*, 4(1), 576–582.
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation*. Jossey-Bass.
- Nashirah, N. Z., Chusnaeni, N. N. F., Nina, N. A., Rahmadhani, N. E., Jahro, S. N., Badarudin, A., & Kholisoh, N. (2025). *Administrasi sarana dan prasarana dan implementasinya di pesantren*. Penerbit Tahta Media.
- Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE.
- Purnamasari, I., Nafisah, K., Dzakiri, L. H., Deesaeh, K. A., & Hidayat, R. (2025). Inventarisasi sarana dan prasarana di MTs Negeri 2 Jember. *Al-Amiyah: Jurnal Ilmiah Multidisiplin*, 2(2), 203–216.
- Putri, F. A., Damayanti, H. D., & Mardiyah, M. (2025). Hasil evaluasi diri sekolah dan penentuan prioritas rekomendasi dalam meningkatkan kualitas pendidikan Islam. *Al-Rabwah*, 19(2), 77–96.
- Putri, N., & Muis, A. (2025). Implementasi sistem inventarisasi sarana dan prasarana berbasis digital. *Jurnal Pelita Ilmiah Pendidikan*, 1(2), 135–148.
- Rashid, A., Rasheed, R., & Amirah, N. A. (2026). Benchmarking inventory management practices and organizational performance. *Benchmarking: An International Journal*. Advance online publication. <https://doi.org/10.1108/BIJ-12-2024-1096>
- Riski, S. M., Br, B. K. R., Khaira, M., & Fitri, A. (2025). Pelaksanaan praktik pengalaman lapangan (PPL) II program studi manajemen pendidikan Islam di MTsN 1 Langkat. *J-MPI: Jurnal Manajemen Pendidikan, Penelitian dan Kajian Keislaman*, 4(1), 52–62.
- Rizih, R. A. (2025). Strategi kepala tata usaha sekolah untuk meningkatkan pelayanan administrasi di sekolah menengah pertama negeri 10 Tapung (Unpublished thesis). Universitas Islam Negeri Sultan Syarif Kasim Riau.
- Sariwardani, A., Sinulingga, E., Supangat, S., Kogoya, T., Susanti, R. S., Muda, F. P., Noor, A. H., Silubun, H. C. A., & Sampeangin, H. (2025). *Manajemen pendidikan*. CV Edu Akademi.
- Schildkamp, K. (2019). Data-based decision-making for school improvement: Research insights and gaps. *Educational research*, 61(3), 257–273. <https://doi.org/10.1080/00131881.2019.1625716>
- Sibarani, L. A., Amelia, A., Sembiring, A. W., & Mukhlisin, A. (2024). Peran kepemimpinan kepala sekolah dalam menerapkan strategi pendidikan untuk menciptakan kualitas pembelajaran di sekolah. *Innovative: Journal of Social Science Research*, 4(1), 167–178.
- Silaban, B., & Hutasoit, R. (2025). Strategis di Kabupaten Tapanuli Utara. [Journal name unavailable], 7*(3), 1024–1035.
- Turmidzi, I. (2021). Pengelolaan pendidikan bermutu di madrasah. *Tarbawi: Jurnal Pemikiran dan Pendidikan Islam*, 4(2), 165–181. <https://doi.org/10.51476/tarbawi.v4i2.264>

- Ula, K. I., & Rohman, T. (2024). Peran manajemen sarana dan prasarana dalam menciptakan lingkungan belajar yang kondusif di lembaga pendidikan Islam. *Ekoma: Jurnal Ekonomi, Manajemen, Akuntansi*, 3(4), 1628–1637.
- Winarsih, P., & Santoso, S. (2025). Strategi efektif dalam inventarisasi sarana dan prasarana dalam upaya mewujudkan efisiensi peningkatan mutu pembelajaran Islam. *Al-Ikhtiar: Jurnal Studi Islam*, 2(3), 215–225.
- Yanto, M. (2025). *Manajemen sarana dan prasarana pendidikan*. CV Eureka Media Aksara.