



At-Tarbawi: Jurnal Pendidikan, Sosial dan Kebudayaan
e-ISSN: 2086-9754/p-ISSN: 2086-9754
Volume 13 Number 1 2026
doi: 10.32505/f25h9v21

Implementation of Islamic Education Management in the Development of Digital Madrasahs: A Case Study at MIS Terpadu Kota Langsa

Received:
November 3, 2025

Accepted:
February 17, 2026

Published:
April 22, 2026

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Abstract

Digital transformation in madrasah ibtidaiyah presents challenges in integrating technology into learning processes grounded in Islamic educational values. This study aims to analyse the implementation of Islamic education management in the development of digital madrasahs and to explore the use of technology in supporting learning, assessment, and students' digital literacy at MIS Terpadu Kota Langsa. The study employs a qualitative approach with a case study design, involving the principal, teachers, and educational staff as informants through in-depth interviews, observations, and documentation. Data were analysed using a descriptive-analytical approach with source triangulation and member checking to ensure data validity. The findings indicate that digital classes are implemented for students in grades 4–6 through a readiness-based and contextual approach, taking into account cognitive readiness, foundational literacy, and parental support. Learning Management Systems (LMS) and digital learning applications strengthen the management of learning materials and activities, while digital-based final examinations function as tools for both assessment and the development of technological literacy. Digital transformation also enhances teachers' professional roles and highlights the importance of integrating Islamic values into decision-making processes. This study emphasises that the success of digital madrasahs is determined by the institution's ability to manage technology in an ethical, pedagogical, and contextual manner. Theoretically, this study contributes new insights into the principles of Islamic education management that support the development of digital madrasahs, ensuring that technological transformation in primary education remains aligned with the values of tarbiyah.

Keywords: *Digital Madrasah, Islamic Education Management, Primary Education*

Abstrak

Transformasi digital di madrasah ibtidaiyah menghadirkan tantangan dalam mengintegrasikan teknologi ke dalam pembelajaran yang berlandaskan nilai pendidikan Islam. Penelitian ini bertujuan untuk menganalisis implementasi manajemen pendidikan Islam dalam pengembangan madrasah digital dan mengeksplorasi penggunaan teknologi

untuk mendukung pembelajaran, evaluasi, serta literasi digital siswa di MIS Terpadu Kota Langsa. Penelitian menggunakan pendekatan kualitatif dengan desain studi kasus, melibatkan kepala madrasah, guru, dan tenaga kependidikan sebagai informan, melalui wawancara mendalam, observasi, dan dokumentasi. Analisis data dilakukan secara deskriptif-analitis dengan triangulasi sumber dan member check untuk menjaga keabsahan data. Hasil penelitian menunjukkan bahwa kelas digital diterapkan pada siswa kelas 4–6 dengan pendekatan berbasis kesiapan dan kontekstual, dengan mempertimbangkan kesiapan kognitif, literasi dasar, serta dukungan orang tua. LMS dan aplikasi pembelajaran digital memperkuat pengelolaan materi dan aktivitas belajar, sedangkan UAS berbasis digital berfungsi sebagai sarana evaluasi dan pembiasaan literasi teknologi. Transformasi digital juga memperkuat peran profesional guru dan menegaskan pentingnya integrasi nilai Islam dalam pengambilan keputusan. Studi ini menekankan bahwa keberhasilan madrasah digital ditentukan oleh kecermatan institusi dalam mengelola teknologi secara etis, pedagogis, dan kontekstual. Secara teoretis, penelitian ini memberikan wawasan baru tentang prinsip-prinsip manajemen pendidikan Islam yang dapat mendukung pengembangan madrasah digital, sehingga transformasi teknologi di pendidikan dasar tetap selaras dengan nilai tarbiyah.

Kata Kunci: Madrasah Digital, Manajemen, Pendidikan Dasa, Pendidikan Islam,

Introduction

The development of digital technology has brought fundamental changes to the implementation of education at various levels. At the primary education level, digital technology has begun to be utilised as a supporting tool for learning, assessment, and school administrative management (Aka, 2017). This phenomenon has also extended to *madrasah ibtidaiyah* as part of the national education system, which possesses strong Islamic characteristics (Khodijah & Utama, 2025). The digitalisation of education is viewed as a strategic effort to improve the quality of learning and the efficiency of educational management, while also aligning Islamic educational practices with the demands of contemporary developments and students' needs in the digital era (Muslim, 2024).

The implementation of digital learning platforms at the primary education level has shown significant positive impacts on the learning process. The use of technology enhances interaction between teachers and students, broadens access to diverse learning resources, and increases students' learning motivation through more engaging and adaptive approaches (Puspitoningrum et al., 2024). According to Shobirin et al.

(2025), the use of digital technology in the context of Islamic education is not merely understood as the modernization of learning tools, but also as a means to support value internalization, character development, and the strengthening of students' moral conduct. Madrasahs are expected to utilize technology in a directed, wise, and responsible manner so that it does not contradict the principles of Islamic education (Abdurrahman & Nihaya, 2025).

The development of digital madrasahs at the primary education level should ideally be grounded in a balanced Islamic education management system that integrates pedagogical aspects, Islamic values, and digital transformation in a sustainable manner. In this context, madrasah leadership plays a crucial role by applying the principle of *amanah* (trustworthiness) in decision-making related to technology, upholding the value of *'adl* (justice) in resource management, and implementing *shura* (consultation) by involving teachers, parents, and other stakeholders (Fauziah & Thohir, 2025). This approach ensures that the use of technology is not only pedagogically effective but also aligned with Islamic values and encourages active participation from the entire school community.

Previous studies indicate that the utilisation of digital technology in *madrasah ibtidaiyah* has not yet been fully implemented as expected. Although digital devices and applications are increasingly available, their use remains limited and is not yet integrated into the overall management system of the madrasah (Jamin & Rohman, 2026). Digital-based learning and assessment activities tend to be implemented partially and often depend on individual teacher initiatives (Maharani et al., 2025; Ramadhani et al., 2025). This condition reflects a gap between the ideal concept of digital madrasah development and its actual practice at the primary education level.

This gap is further reinforced by various challenges faced by madrasahs in consistently implementing digital technology. Limited digital competence among teachers, the readiness of primary school students, and

the absence of comprehensive managerial guidelines contribute to the low level of technology integration in face-to-face learning (González et al., 2025; Kusumaningrum et al., 2024). In addition, concerns about the negative impact of technology on children's character development also influence the cautious attitudes of madrasah stakeholders (Kar et al., 2025). These conditions indicate a lack of alignment between digital vision, instructional practices, and Islamic educational values.

These issues raise fundamental questions regarding how digital technology should be managed within the framework of Islamic education management in *madrasah ibtidaiyah*. The problem is not only related to the technical use of technology but also involves planning, organising, implementing, and evaluating digital-based learning activities. Therefore, the development of digital madrasahs requires a systematic managerial approach to ensure that technology truly functions as a means to improve the quality of Islamic education, rather than merely serving as a supplementary tool.

From an academic perspective, previous studies on digitalisation in education have largely focused on the effectiveness of digital media, its impact on learning outcomes, or the readiness of technological infrastructure (Ariesta, 2019; Tsunami et al., 2026). These studies generally position technology as the primary object of analysis, while managerial aspects and Islamic educational values have not been thoroughly explored. As a result, understanding of how Islamic education management directs and controls the use of digital technology in madrasahs remains limited, particularly at the primary education level.

Furthermore, studies on digital madrasahs tend to emphasise the effectiveness of technology use in learning (Calora et al., 2023; Permana et al., 2024). However, few studies explicitly examine how digital technology is integrated within the framework of Islamic education management. In fact, the success of digital madrasah development is strongly influenced by leadership and organisational culture (Nalda et al., 2020). This indicates a

relevant research gap that needs to be addressed through more contextual and in-depth studies.

Based on the gap between ideal conditions and existing practices, this study focuses on the implementation of Islamic education management in the development of digital madrasahs at MIS Terpadu Kota Langsa. The study specifically examines how madrasahs manage the use of digital technology in face-to-face learning and assessment activities by considering students' readiness, pedagogical needs, and the internalisation of Islamic educational values as the foundation for digital madrasah development.

As an empirical context, the digital madrasah program at MIS Terpadu Kota Langsa has been implemented gradually since the 2019/2020 academic year, before the COVID-19 pandemic, and has demonstrated tangible impacts, particularly when online learning became a necessity. Support from the Regional Office of the Ministry of Religious Affairs of Aceh, along with collaboration with PT. Acer Indonesia, has further strengthened the madrasah's readiness. The program was officially launched on February 11, 2022, making MIS Terpadu a practical laboratory for understanding the development of digital madrasahs within the framework of Islamic education management.

The novelty of this study lies in its integrative approach that connects the concept of Islamic education management with the practical development of digital madrasahs at the primary education level. This study does not merely describe the use of technology but analyses it as part of an integrated management system. It offers a new perspective on how face-to-face learning can be effectively supported by technology, resulting in a contextual digital madrasah model aligned with the characteristics of primary-level students.

Through empirical findings and conceptual analysis, this study is expected to contribute to the development of knowledge in Islamic education management, particularly in the context of digital transformation in madrasahs. Practically, the findings can serve as a reference for madrasah

principals and teachers in designing policies and strategies for digital madrasah development that align with Islamic values. Digital madrasahs are therefore expected not only to adapt to technological advancements but also to consistently uphold the goals and values of Islamic education.

Methods

This study employs a qualitative approach with a case study design, aiming to gain an in-depth understanding of the implementation of Islamic education management in the development of digital madrasahs within the context of primary education. This approach was chosen to explore management processes, decision-making, and digital-based learning practices as they naturally occur in the madrasah setting. The study was conducted at Madrasah Ibtidaiyah Swasta (MIS) Terpadu Kota Langsa, as it is the first institution in Langsa to initiate the implementation of digital learning since 2021 within a face-to-face learning context, making it relevant to the focus and objectives of the study.

The research participants included the principal, vice principal, teachers teaching in grades 4-6, and educational staff. Informants were selected using purposive sampling, based on their involvement and knowledge regarding the planning, implementation, and evaluation of digital-based learning. Data were collected through in-depth interviews, direct observations, and document analysis. Interviews were conducted to explore perceptions and managerial policies, observations were used to examine digital learning practices in the classroom, and documentation was analysed to review programs and institutional policies.

Data analysis was conducted through the stages of data condensation, data display, and conclusion drawing (Miles et al., 2014). The analysis process began with open coding to identify initial categories, followed by thematic categorization based on the framework of Islamic education management and the concept of digital madrasah development. To enhance

the validity of the thematic analysis, preliminary findings were discussed through peer debriefing sessions with colleagues who have expertise in qualitative research and Islamic education management. In addition, data validity was ensured through source and method triangulation, as well as member checking with the informants. The findings are presented in a descriptive-analytical manner to illustrate patterns of managing digital-based learning and assessment.

Result

1) Implementation of Digital Classes at MIS Terpadu Kota Langsa

The implementation of digital madrasahs at MIS Terpadu Kota Langsa is marked by the establishment of digital classes as an initial form of technology integration in primary education. Digital classes are defined as regular classes that conduct face-to-face learning supported by digital devices and applications. In this model, technology does not replace the role of the teacher or direct classroom interaction, but rather serves as a supporting tool for the learning process. This approach indicates that the madrasah views digitalisation as a means of strengthening learning processes rather than as a complete transformation of conventional instructional practices.

The establishment of digital classes is not implemented across all grade levels but is limited to grades 4, 5, and 6. This decision is based on considerations of students' readiness to use digital devices, as well as their level of basic literacy development. In addition, the formation of digital classes takes into account the interest and consent of both students and their parents. Therefore, participation in digital classes is voluntary and not mandatory, allowing the madrasah to accommodate varying levels of readiness and individual needs.

In practice, digital classes operate alongside non-digital regular classes within the same institutional system. Both types of classes follow the same curriculum and are managed under a unified organisational structure. The primary difference lies in the instructional media and tools used during the teaching and learning process. Students in digital classes more frequently utilise technological devices such as laptops or mobile devices, whereas regular classes primarily rely on conventional learning media with limited use of technology.

Despite the more intensive use of technology in digital classes, the madrasah continues to maintain the limited use of manual writing practices. Students in digital classes are still encouraged to engage in handwriting activities for specific tasks, particularly those related to foundational literacy development. This policy aims to maintain a balance between digital skills and fundamental academic skills, especially handwriting, which is considered important for students' cognitive and motor development at the primary education level.

The implementation of digital classes in *madrasah ibtidaiyah* reflects a gradual and contextual development pattern. Rather than applying digitalisation policies universally, the madrasah adapts them to students' conditions, parental support, and the readiness of the learning environment. This approach demonstrates the institution's cautious integration of technology to ensure that it does not disrupt the core processes of primary education, while still providing opportunities for the proportional development of students' digital competencies.

2) Integration of Learning Management Systems (LMS) in Learning

Learning based on a Learning Management System (LMS) at MIS Terpadu is implemented within a structured and controlled face-to-face learning environment and is limited to digital classes. The LMS used is *Jelajah Ilmu*, developed by Acer, which functions as a supporting system for

managing classroom learning. This system does not replace the teacher's role as the primary instructor but rather strengthens the management of learning materials, assignments, and student learning activities. Teachers continue to lead the learning process through direct explanation, guidance, and face-to-face interaction, while the LMS serves as a pedagogical tool to enhance the organisation and effectiveness of instruction.

In its implementation, *Jelajah Ilmu* is designed as an integrated platform accessible to teachers, students, and parents through individual accounts. Teachers use the LMS to deliver learning materials, manage assignments, and monitor students' learning activities. Students access materials and complete tasks during classroom sessions under teacher supervision. Meanwhile, parents are given access to monitor their children's learning progress. This pattern indicates that the LMS functions not only as a learning medium but also as a management and communication tool that connects the madrasah with parents.

During the learning process, teachers utilise the LMS to present instructional materials that are systematically and structurally organised. Learning content, instructions, and assignments are integrated into a single system, enabling students to follow the learning sequence in an orderly manner under teacher supervision. For students, the LMS serves as a learning guide that helps them understand the stages of classroom instruction. For teachers, it facilitates classroom management and documentation of the learning process, making teaching activities more organised and directed.

In LMS-based learning, teachers play an active role in providing both technical and academic support to students. They guide students in accessing materials, completing tasks, and using the features available in *Jelajah Ilmu*. This support ensures that the use of technology does not become a barrier to learning and that students remain focused on learning objectives. With direct teacher guidance, the LMS can be optimally utilized as a supporting tool tailored to students' needs in the classroom.

LMS-based learning also enables teachers to monitor students' activities and engagement throughout the learning process. Through the system, teachers can track students' participation in accessing materials and completing assignments. This information assists teachers in evaluating students' responses to instruction and in adjusting teaching strategies accordingly. Thus, the LMS functions as a monitoring tool that supports more accurate and data-informed pedagogical decision-making.

In addition to using *Jelajah Ilmu*, teachers also integrate it with various game-based learning applications such as Quizizz, Wordwall, Kahoot, and similar platforms. These applications are used to diversify instructional methods, particularly for practice, reinforcement, and formative assessment activities. The use of game-based applications aims to enhance student engagement and create a more interactive learning environment. This integration demonstrates that digital learning in the madrasah is implemented flexibly and creatively without eliminating the core structure of face-to-face instruction.

Despite the use of LMS and other digital learning applications, the madrasah continues to maintain limited use of manual learning media. Students are still encouraged to engage in handwriting activities for specific tasks, particularly to support literacy development and the reinforcement of basic concepts. This policy aims to maintain a balance between digital competencies and fundamental academic skills. Therefore, digital-based learning does not fully replace conventional practices but is integrated proportionally according to the needs and characteristics of students at the *madrasah ibtidaiyah* level.

3) Digital-Based Assessment as a Means of Technological Literacy Development

Digital-based assessment in this *madrasah ibtidaiyah* is primarily implemented through Final Semester Examinations (UAS) as part of a

strategy to develop students' technological literacy. The examinations are conducted using digital devices such as laptops and smartphones through the Google Forms platform. This policy is applied uniformly to all students in grades 4, 5, and 6, both in digital and regular classes. The implementation of digital-based examinations is not treated as a limited experiment but rather as an institutional policy designed to familiarise students with the purposeful use of technology in the context of academic assessment.

The implementation of digital-based UAS at MIS Terpadu is part of the madrasah's vision for digital development, which emphasises gradual adaptation to the use of technology in the assessment process. This policy serves as an internal strategy to establish a systematic and structured evaluation culture aligned with the evolving digital learning environment. The use of digital devices and systems in academic assessment is expected to enhance upper-grade students' readiness to engage with various forms of computer-based testing, which require basic technical skills, comprehension of digital instructions, and procedural discipline. In this approach, digital assessment is not viewed as an end in itself but as part of a continuous process of strengthening students' learning competencies.

The digital-based examinations are conducted within a face-to-face learning framework. Students complete the exams in the classroom under the direct supervision of teachers. Teachers ensure that the assessment process is orderly, honest, and in accordance with established procedures. The use of digital devices does not diminish the teacher's role as a supervisor and guardian of academic integrity. In this context, digital examinations not only measure students' cognitive achievement but also foster discipline, responsibility, and ethical use of technology during the assessment process.

To maintain order and prevent misuse of devices, the madrasah implements a controlled smartphone management policy. Upon arrival at school, students are required to submit their smartphones to the homeroom teacher, and the devices are returned only at the time of the examination.

After completing each subject exam, students return the devices to the teacher. This policy ensures that digital devices are used strictly for academic purposes and are not misused within the school environment.

The use of Google Forms as an assessment tool provides convenience in managing test items and results. Teachers can design questions systematically and adjust their level of difficulty according to the targeted competencies. Additionally, the digital system enables automatic compilation of results, facilitating more efficient analysis of students' learning outcomes. This practice allows teachers to obtain faster and more accurate insights into students' understanding of the material covered throughout the semester.

The implementation of digital-based examinations for students in grades 4, 5, and 6 is based on considerations of literacy readiness and technical ability. At this level, students are considered capable of reading, understanding written instructions, and operating digital devices at a basic level. Therefore, digital-based UAS is deemed more appropriate for upper-grade students than for lower-grade students. This approach reflects a selective policy aligned with students' developmental stages.

In practice, teachers provide technical assistance to students before and during the examination process. This support includes guidance on accessing the questions, completing answers, and submitting responses correctly. Teachers also anticipate potential technical issues, such as login difficulties or device malfunctions. Through this support, the examination functions not only as a tool for measuring learning outcomes but also as a means of fostering technological literacy and responsible technology use among *madrasah ibtidaiyah* students.

4) A Readiness-Based and Contextual Approach in Digital Madrasah Development

The development of digital madrasahs at the primary education level is implemented through a readiness-based and contextual approach, with

students' readiness as the primary consideration. The madrasah recognises that students' cognitive abilities, basic literacy, and psychological maturity significantly influence the effectiveness of technology use in learning. Therefore, digital-based learning and assessment are only applied to students in grades 4, 5, and 6, who are considered capable of reading, understanding instructions, and operating digital devices at a basic level. This approach reflects a cautious effort to avoid the use of technology that may hinder students' learning processes.

In contrast, students in grades 1, 2, and 3 are not fully involved in digital-based learning or examinations. At this level, instruction focuses on strengthening foundational literacy skills such as reading, writing, and numeracy. The madrasah considers that the use of digital devices at the early stage of education may distract students from the primary learning objectives. In addition, limited reading ability makes it difficult for lower-grade students to interact with digital instructions. Therefore, conventional approaches are maintained as instructional strategies that are more appropriate to students' developmental characteristics.

In addition to students' readiness, parental capacity and readiness are also important considerations in the implementation of digital madrasahs. The establishment of digital classes is based on parental consent and readiness, including both moral support and the availability of learning devices at home. The madrasah acknowledges that the success of digital learning at the primary education level is highly dependent on parental involvement, particularly in assisting children outside school hours. Therefore, participation in digital classes is not mandatory but is offered as an option based on each family's circumstances.

Parents' ability to provide digital devices, such as laptops or smartphones, also influences madrasah policy. The institution seeks to prevent social inequality arising from unequal access to technology. By implementing digital and regular classes in parallel, the madrasah provides

flexibility for parents to choose learning models that align with their economic capacity and readiness. This approach indicates that the development of digital madrasahs is not solely technology-oriented but also considers principles of equity and inclusivity within Islamic education.

The implementation of this readiness-based and contextual approach also reflects the madrasah's effort to maintain a balance between innovation and Islamic educational values. Digitalization is not imposed uniformly but is managed gradually and proportionally. Technology is positioned as a supporting tool for learning rather than as an end in itself. In this way, the madrasah ensures that the use of technology does not diminish direct interaction between teachers and students and continues to support the development of students' character and moral values.

This readiness-based and contextual approach, which considers both students' readiness and parental capacity, demonstrates a level of managerial awareness in the development of digital madrasahs. This policy is not merely driven by trends in educational digitalization but is grounded in an analysis of social, pedagogical, and value-based contexts. Through gradual and adaptive implementation, the madrasah seeks to establish a realistic and sustainable model of digitalization. This practice highlights that the development of digital madrasahs requires policies that are responsive to students' conditions and family environments as integral components of the primary education system.

Discussion

Digital transformation in education is often framed as a process of technological adoption; however, the findings of this study indicate that the core issue lies in how educational institutions interpret and manage such change. Digitalization does not function as an independent variable that automatically improves the quality of learning, but rather as a process mediated by managerial decisions, pedagogical considerations, and the social

context of the school. McCarthy et al. (2023) argue that an excessive focus on technological aspects risks oversimplifying the complexity of education, as it fails to adequately consider institutional contexts and the dynamics of pedagogical practices. Therefore, digital madrasahs are more appropriately understood as complex institutional constructions rather than merely technological innovations.

Within this framework, the use of technology in face-to-face learning reflects a shift in the meaning of digital integration in the classroom. Technology is not intended to replace physical classrooms or transfer interactions into fully online environments; instead, it serves to strengthen the systematic management of learning processes. It functions as a means of organizing learning experiences, enabling traceability of activities, consistency in instructional structure, and efficiency in pedagogical administration (Al-Shaikhli, 2023). This perspective positions digitalization as a supporting instrument for managing face-to-face instruction rather than as an instructional goal in itself (Wohlfart & Wagner, 2025). In this sense, digital-based learning at the primary education level is understood as reinforcing existing classroom practices rather than shifting toward fully online learning.

The role of teachers within the digital madrasah ecosystem is strengthened rather than diminished, contrary to common assumptions in the discourse of educational digitalization. Instead of transferring instructional responsibility entirely to technology, digital integration requires teachers to be more adaptive in designing interactions, monitoring student engagement, and interpreting learning data in real time. In other words, technology expands teachers' professional roles and demands more reflective pedagogical capacities. These findings reinforce the argument of Theodorio et al. (2024) that technology serves as a supportive tool for pedagogical practice, maintaining the centrality of human interaction and

cognitive development, particularly in primary education where direct guidance remains essential.

A readiness-based and contextual approach to technology integration emphasizes the importance of pedagogical considerations and awareness of students' developmental stages. Rather than implementing all digital innovations simultaneously, the madrasah selects technologies that align with students' cognitive capacity, foundational literacy, and social interaction needs. This is consistent with child development theories suggesting that excessive use of digital devices may disrupt attention, self-regulation, and social relationships (Ningrum, 2024; Zaman, 2026). Limiting the use of technology, therefore, should not be seen as resistance to progress, but as a managerial reflection that responsible digital transformation requires institutions to set priorities and define pedagogical boundaries for innovation.

The implementation of digital-based Final Semester Examinations (UAS) in this study expands the understanding of summative assessment while highlighting the dimension of students' digital literacy in *madrasah ibtidaiyah*. Assessment is no longer limited to measuring cognitive achievement but also functions as a means of familiarizing students with digital evaluation procedures and developing technical competencies relevant to the twenty-first century (Gikandi et al., 2011). This approach aligns with the paradigm of authentic assessment, which emphasizes active student engagement in evaluation processes, reflection on learning outcomes, and understanding of procedural and academic ethics (Saidah & Muhid, 2025). Digital-based assessments enable teachers to obtain timely and systematic feedback, supporting data-informed pedagogical decision-making (Fitria et al., 2025). In this way, summative assessment functions not only as an administrative mechanism but also as a pedagogical instrument that integrates technology, enhances informational accuracy, and fosters disciplined learning habits in the classroom.

Parental involvement in the development of digital madrasahs underscores that educational transformation does not occur in isolation within institutional settings. At the primary education level, digitalization is highly dependent on family capacity in supporting students' learning practices. The ecological perspective of education positions schools and families as interconnected systems rather than separate entities (Allen et al., 2023). In this context, technology policies that are responsive to family realities represent a form of socially sustainable innovation. Digital madrasahs, therefore, are required not only to be technologically adaptive but also socially responsive to students' lived contexts.

Consideration of parents' economic conditions and access to technology enriches the discourse on equity in digital transformation. The assumption of uniform access risks generating new forms of exclusion that contradict the goals of educational equity. By providing flexibility in technology implementation, the madrasah demonstrates an inclusive approach that acknowledges the diversity of students' backgrounds. In this context, digitalization is not imposed as a single standard but negotiated as a pedagogical choice. Such an approach highlights that digital equity involves not only access to devices but also institutional policy design.

From a leadership perspective, the findings of this study affirm that digital transformation is the result of long-term strategic decision-making. Leadership plays a crucial role in interpreting the direction of change, setting priorities, and maintaining institutional values amidst pressures for innovation (Mincu, 2022). Without reflective leadership, digitalization risks becoming a reactive response to external trends. In the context of madrasahs, effective leadership is reflected in the ability to integrate innovation with established educational visions, ensuring that technological change does not obscure institutional goals.

From the perspective of Islamic education management, the practice of digital madrasahs in this study demonstrates that technology is positioned as an instrument subordinate to the goals of *tarbiyah* (Suliyah et al., 2026). Digitalization is not treated as a determinant of educational direction but as a means that is ethically and pedagogically regulated. This approach illustrates how normative values can function as a framework for selecting innovations rather than as barriers to change. Thus, Islamic education serves as a reflective horizon that guides decision-making, rather than as a repetitive normative justification.

Conceptually, this study proposes a model of digital madrasah transformation that integrates Islamic education management, a readiness-based and contextual approach to technology use, and value-oriented regulation in learning. This model emphasizes that the success of digitalization is not determined by the intensity of technology use, but by the institution's ability to position technology in an ethical, pedagogical, and contextual manner. Theoretically, this study expands the discourse on Islamic education and digital transformation at the primary education level by demonstrating how the principles of Islamic education management can support technological innovation aligned with the values of *tarbiyah* (Murdianto, 2024).

Conclusion

The implementation of digital madrasahs at the primary education level demonstrates that digital transformation is not merely a process of technological adoption, but rather the result of contextual and readiness-based managerial practices. Digital classes are implemented for students in grades 4-6, taking into account cognitive readiness, foundational literacy, parental support, and the readiness of the learning environment. Learning Management Systems (LMS) and digital learning applications are utilised to strengthen the management of learning materials, assignments, and

activities, while digital-based final examinations function both as tools for developing technological literacy and as summative assessment instruments. These findings indicate that the success of digital madrasahs depends on the institution's ability to position technology as a supporting tool for learning, rather than as an end in itself.

The development of digital madrasahs also strengthens the professional role of teachers, who are required to design interactions, guide students, and interpret learning data reflectively. A readiness-based and contextual approach, which considers students' developmental stages and parental support, reflects inclusive and equitable practices in digital transformation. From the perspective of Islamic education management, digitalisation is positioned as a means subordinate to the goals of *tarbiyah*, where technological innovation is selected and regulated ethically and pedagogically. This model emphasises reflective leadership, contextual pedagogical practices, and the integration of Islamic values, thereby positioning digital madrasahs as a sustainable, human-centred, and adaptive transformation process.

The findings of this study have important implications for madrasah leaders and educational policymakers, highlighting the need for technology planning and management that are readiness-based, contextual, ethical, and grounded in Islamic values. This study is limited to Madrasah Ibtidaiyah Swasta (MIS) Terpadu Kota Langsa; therefore, the findings cannot be broadly generalized. Future research is recommended to conduct comparative studies across multiple madrasahs, examine the long-term impact of digital integration on learning outcomes, and explore the experiences of students, teachers, and parents in greater depth.

References

- Abdurrahman, A., & Nihaya, I. (2025). Strategi pengembangan kurikulum pendidikan moral di era digital di Madrasah Ibtidaiyah Al-Ghozali. *Jurnal Educatio FKIP UNMA*, 11(2). <https://doi.org/10.31949/educatio.v11i2.12755>
- Aka, K. A. (2017). Pemanfaatan teknologi informasi dan komunikasi (tik) sebagai wujud inovasi sumber belajar di sekolah dasar. *ELSE (Elementary School Education Journal): Jurnal Pendidikan dan Pembelajaran Sekolah Dasar*, 1(2), 28–37. <https://doi.org/10.30651/else.v1i2a.1041>
- Allen, K.-A., Gallo Cordoba, B., Ryan, T., Arslan, G., Slaten, C. D., Ferguson, J. K., Bozoglan, B., Abdollahi, A., & Vella-Brodrick, D. (2023). Examining predictors of school belonging using a socio-ecological perspective. *Journal of Child and Family Studies*, 32(9), 2804–2819. <https://doi.org/10.1007/s10826-022-02305-1>
- Al-Shaikhli, D. (2023). The effect of tracking technology on students' perceptions of their continuing intention to use a learning management system. *Education and Information Technologies*, 28(1), 343–371. <https://doi.org/10.1007/s10639-022-11156-8>
- Ariesta, F. W. (2019). Effectiveness of e-learning media to improve learning outcomes in natural science in primary schools. *Journal of Education Research and Evaluation*, 3(2), 88–95. <https://doi.org/10.23887/jere.v3i2.17203>
- Calora, I. P., Arif, M., & Rofiq, M. H. (2023). Pemanfaatan pembelajaran berbasis kelas digital di Madrasah Ibtidaiyah. *Attadrib: Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, 6(2), 321–331. <https://doi.org/10.54069/attadrib.v6i2.592>
- Fauziah, H. A., & Thohir, M. (2025). Prinsip syura dalam pengambilan keputusan kepemimpinan birokrasi pada lembaga pendidikan Islam. *Jurnal Kepemimpinan dan Pengurusan Sekolah*, 10(4), 2710–2718. <https://doi.org/10.34125/jkps.v10i4.1301>
- Fitria, E. M., Nurhayati, A., Luthfiyah, L., Ilham, I., & Syarifuddin, S. (2025). Asesmen berbasis teknologi dalam pembelajaran PAI. *Mudabbir: Journal Research and Education Studies*, 5(2), 4302–4309. <https://doi.org/10.56832/mudabbir.v5i2.2234>
- Gikandi, J. W., Morrow, D., & Davis, N. E. (2011). Online formative assessment in higher education: a review of the literature. *Computers & Education*, 57(4), 2333–2351. <https://doi.org/10.1016/j.compedu.2011.06.004>
- González, M. de los Á. D.-, Rosa, A. L. de la, Hervás-Gómez, C., & Román-Graván, P. (2025). Teacher digital competence: keys for an educational future through a systematic review. *Contemporary Educational Technology*, 17(2). <https://eric.ed.gov/?id=EJ1470028>

- Jamin, H., & Rohman, N. (2026). Transformasi digital di Madrasah Ibtidaiyah di Kota Banda Aceh dan Kabupaten Aceh Barat. *Bidayah: Studi Ilmu-Ilmu Keislaman*, 16(2), 246–256. <https://doi.org/10.47498/gfb4v188>
- Kar, S. S., Dube, R., Goud, B. K. M., Gibrata, Q. S., El-Balbissi, A. A., Salim, T. A. A., & Fatayerji, R. N. M. A. K. (2025). Impact of screen time on the development of children. *Children*, 12(10). <https://doi.org/10.3390/children12101297>
- Khodijah, D. N., & Utama, M. M. A. (2025). Integration of character education and counselling guidance at Madrasah Ibtidaiyah. *Al-Azkiya: Jurnal Pendidikan MI/SD*, 10(2), 239–256. <https://doi.org/10.32505/azkiya.v10i2.13917>
- Kusumaningrum, H., Nst, A. M. I., Fayza, F. K. N., & Isfayanti, A. C. (2024). Integrasi teknologi dalam manajemen pendidikan: Peluang dan tantangan. *Al-Gafari: Manajemen Dan Pendidikan*, 2(3), 263–277.
- Maharani, J., Hariandi, A., & Putri, A. G. E. (2025). Strategi manajemen perubahan guru dalam optimalisasi penggunaan platform pembelajaran digital di sekolah dasar. *Pedagogik Journal of Islamic Elementary School*, 8(3), 1195–1213. <https://doi.org/10.24256/pijies.v8i3.8836>
- McCarthy, A. M., Maor, D., McConney, A., & Cavanaugh, C. (2023). Digital transformation in education: critical components for leaders of system change. *Social Sciences & Humanities Open*, 8(1), 100479. <https://doi.org/10.1016/j.ssaho.2023.100479>
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis, a methods sourcebook* (3rd ed.). Sage Publications.
- Mincu, M. (2022). Why is school leadership key to transforming education? structural and cultural assumptions for quality education in diverse contexts. *Prospects*, 52(3), 231–242. <https://doi.org/10.1007/s11125-022-09625-6>
- Murdianto, M. (2024). Implementation of Islamic education management to realise a superior education institution. *At-Tarbawi: Jurnal Pendidikan, Sosial dan Kebudayaan*, 11(1), 134–143. <https://doi.org/10.32505/tarbawi.v11i1.8173>
- Muslim, M. (2024). Internalising digital technology in Islamic education. *Scaffolding: Jurnal Pendidikan Islam dan Multikulturalisme*, 6(3). <https://doi.org/10.37680/scaffolding.v6i3.6309>
- Nalda, F. N.-, Clavel-San Emeterio, M., Fernández-Ortiz, R., & Arias-Oliva, M. (2020). The strategic influence of school principal leadership in the digital transformation of schools. *Computers in Human Behavior*, 112, 106481. <https://doi.org/10.1016/j.chb.2020.106481>
- Ningrum, M. S. (2024). Dampak teknologi terhadap kemampuan fokus dan perhatian. *Circle Archive*, 1(4). <https://circle-archive.com/index.php/carc/article/view/66>

- Permana, B. S., Hazizah, L. A., & Herlambang, Y. T. (2024). Teknologi pendidikan: efektivitas penggunaan media pembelajaran berbasis teknologi di era digitalisasi. *Khatulistiwa: Jurnal Pendidikan dan Sosial Humaniora*, 4(1), 19–28. <https://doi.org/10.55606/khatulistiwa.v4i1.2702>
- Puspitoningrum, E., Nurnoviyati, I., & Suhartono, S. (2024). Dampak implementasi teknologi dalam pembelajaran pendidikan dasar: studi kasus pada efektivitas penggunaan platform pembelajaran digital di sekolah dasar. *Al-Madrasah: Jurnal Ilmiah Pendidikan Madrasah Ibtidaiyah*, 8(3), 970–979.
- Ramadhani, T., Anisah, Aulia, T. H., Anastasya, S. D., & Iskandar, S. (2025). Analisis efektivitas penggunaan media digital dalam evaluasi pembelajaran di sekolah dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 10(02), 467–481. <https://doi.org/10.23969/jp.v10i02.25861>
- Saidah, A., & Muhid, A. (2025). Transformasi evaluasi pendidikan di era digital: integrasi asesmen autentik dan learning analytics. *Action Research Journal Indonesia (ARJI)*, 7(4), 3142–3155. <https://doi.org/10.61227/arji.v7i4.608>
- Shobirin, M. S., Akhyak, & Nur Efendi. (2025). Integrating Islamic values into digital character education: managing curriculum innovation in the era of education 5.0. *International Journal of Education Management and Religion*, 2(2), 141–161. <https://doi.org/10.71305/ijemr.v2i2.352>
- Suliyah, Hanum, N. A., Ulum, M., & Sofiyandi, M. A. (2026). Tantangan dan peluang manajemen pendidikan Islam dalam penguatan identitas islami peserta didik di era digital. *Fawaid: Journal of Islamic Studies*, 2(1), 106–118.
- Theodorio, A. O., Waghid, Z., & Wambua, A. (2024). Technology integration in teacher education: Challenges and adaptations in the post-pandemic era. *Discover Education*, 3(1), 242. <https://doi.org/10.1007/s44217-024-00341-1>
- Tsunami, P. J., Hariandi, A., & Sholeh, M. (2026). Kesiapan infrastruktur teknologi informasi dalam mendukung transformasi digital di sekolah dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 11(01), 167–175. <https://doi.org/10.23969/jp.v11i01.40307>
- Wohlfart, O., & Wagner, I. (2025). Longitudinal perspectives on technology acceptance: Teachers' integration of digital tools through the COVID-19 transition. *Education and Information Technologies*, 30(5), 6091–6115. <https://doi.org/10.1007/s10639-024-12954-y>
- Zaman, K. (2026). Psikologi pendidikan di era digital: Tantangan kognitif dan emosional peserta didik di SMA Integral Hidayatullah Batam. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 11(01), 124–142. <https://doi.org/10.23969/jp.v11i01.40151>