

Centralized Adaptive Governance for Curriculum Development in Islamic Education under Society 5.0

Misbahul Arifin ^{1*} , Muhammad Ilzamul Khoir ² , Achmad Zahri N.A ³ 

^{1,2} Universitas Nurul Jadid, Indonesia

³ Universitas Islam Negeri Madura, Indonesia

*Corresponding Author's e-mail: arifinmisbahul324@gmail.com

ABSTRACT

This study examines how curriculum governance is enacted in Islamic education amid digital transformation in the Society 5.0 era. While existing literature emphasizes digital leadership and technological integration, limited attention has been given to how curriculum governance mediates the relationship between innovation and value-based education. Addressing this gap, the study investigates managerial processes, contextual constraints, and adaptive strategies in a madrasah undergoing curriculum restructuring. A qualitative case study design was employed, involving semi-structured interviews, participant observation, and document analysis. Data were analyzed using a thematic approach supported by QualCoder 3.8, enabling systematic coding and pattern identification across data sources. The findings reveal a governance paradox: curriculum management is structurally coherent yet operationally uneven. Strong leadership ensures alignment with Islamic values through centralized planning, implementation, and evaluation. However, adaptation to digital demands is mediated by disparities in teacher readiness, infrastructural limitations, and weak parent-school linkages. Consequently, curriculum implementation is adaptive but fragmented across instructional contexts. This study offers a novel contribution by reconceptualizing curriculum governance as centralized adaptive governance, demonstrating that adaptation in value-based educational systems is mediated through hierarchical structures rather than driven by decentralization. The findings extend curriculum and digital leadership literature by highlighting the need to balance institutional coherence with distributed pedagogical capacity.

Keywords: curriculum governance, digital transformation, islamic education, society 5.0, adaptive governance, digital leadership, qualitative case study.

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INTRODUCTION

Recent systematic reviews show that digital technologies have become embedded in the basic architecture of contemporary education, not merely as delivery tools but as drivers of change in pedagogy, assessment, teacher roles, and curriculum design.¹ Haleem et al. note that digital technologies became further institutionalized in education after the COVID-19 period, while Mukul and Büyüközkan show that the Education 4.0 literature is expanding rapidly but still leaves important gaps in how schools translate technological change into coherent educational practice.²

In Islamic education, this shift is especially consequential because curriculum design carries a dual mandate: academic learning and the internalization of religious and ethical values.³ In the *madrasah* context examined in this study, value integration is still often confined to Islamic Religious Education (PAI) rather than distributed across the wider curriculum, while differences in teacher digital literacy, infrastructure, and parent-school communication continue to complicate implementation. These conditions indicate that the problem is not only pedagogical but also managerial and organizational.

The rise of the Society 5.0 agenda sharpens this tension. Society 5.0 is widely framed as a human-centered model in which digital innovation should strengthen social responsibility, sustainability, and quality of life rather than replace human judgment.⁴ Recent review work on Education 5.0 in the context of Society 5.0 likewise emphasizes that future-ready education must combine technological competence with ethical and humanistic orientation.⁵ For Islamic schools, the implication is clear: digital adaptation must be governed in a way that reinforces, rather than displaces, religious identity and moral formation.⁶

¹ Chengliang Wang et al., "Education Reform and Change Driven by Digital Technology: A Bibliometric Study from a Global Perspective," *Humanities and Social Sciences Communications* 11, no. 1 (February 12, 2024): 256, <https://doi.org/10.1057/s41599-024-02717-y>; Andrés F. Mena-Guacas et al., "Educational Transformation Through Emerging Technologies: Critical Review of Scientific Impact on Learning," *Education Sciences* 15, no. 3 (March 16, 2025): 368, <https://doi.org/10.3390/educsci15030368>; Ahmad Almufarreh and Muhammad Arshad, "Promising Emerging Technologies for Teaching and Learning: Recent Developments and Future Challenges," *Sustainability* 15, no. 8 (April 20, 2023): 6917, <https://doi.org/10.3390/su15086917>.

² Abid Haleem et al., "Understanding the Role of Digital Technologies in Education: A Review," *Sustainable Operations and Computers* 3 (2022): 275–85, <https://doi.org/10.1016/j.susoc.2022.05.004>; Esin Mukul and Gülçin Büyüközkan, "Digital Transformation in Education: A Systematic Review of Education 4.0," *Technological Forecasting and Social Change* 194 (September 2023): 122664, <https://doi.org/10.1016/j.techfore.2023.122664>.

³ Azyumardi Azra, *Islam in the Indonesian World: An Account of Institutional Formation* (Bandung: Mizan Pustaka, 2006); Mark Halstead, "An Islamic Concept of Education," *Comparative Education* 40, no. 4 (November 2004): 517–29, <https://doi.org/10.1080/0305006042000284510>.

⁴ González-Pérez Laura Icela, Ramírez-Montoya María Soledad, and Enciso-Gonzalez Juan Antonio, "Education 4.0 Maturity Models for Society 5.0: Systematic Literature Review," *Cogent Business & Management* 10, no. 3 (December 11, 2023), <https://doi.org/10.1080/23311975.2023.2256095>; Elias G. Carayannis and Joanna Morawska-Jancelewicz, "The Futures of Europe: Society 5.0 and Industry 5.0 as Driving Forces of Future Universities," *Journal of the Knowledge Economy* 13, no. 4 (December 5, 2022): 3445–71, <https://doi.org/10.1007/s13132-021-00854-2>.

⁵ Sharareh Shahidi Hamedani et al., "Transitioning towards Tomorrow's Workforce: Education 5.0 in the Landscape of Society 5.0: A Systematic Literature Review," *Education Sciences* 14, no. 10 (September 24, 2024): 1041, <https://doi.org/10.3390/educsci14101041>.

⁶ Duwi Habsari Mutamimah et al., "Integration of Prophetic Leadership Values and Digital Innovation on Formation of Islamic Elementary School Culture," *Journal of Education Method and Learning Strategy* 3, no. 02 (May 28, 2025): 316–30, <https://doi.org/10.59653/jemls.v3i02.1636>.

Recent empirical studies also show that the success of digital transformation in schools depends heavily on leadership and teacher readiness. Research in a developing-country school district found that teachers viewed principals' digital leadership as insufficient when school leaders relied mainly on conventional management practices, and the study called for stronger institutional support for digital learning environments.⁷ A cross-sectional study in Greece found that transformational leadership was strongly associated with teachers' satisfaction, digital practice adoption, and the closing of digital competence gaps.⁸ A 2025 systematic thematic review further showed that principals' digital leadership influences teachers' capacity to integrate artificial intelligence through resource allocation, professional development, learning communities, and organizational culture.⁹

Within this broader debate, the present study focuses on MA Nurur Rahmah Pragaan Sumenep Madura, a madrasah actively restructuring its curriculum in response to digitalization while confronting uneven teacher readiness and limited parental involvement. The school provides a useful case for examining how curriculum management is actually negotiated when technological change intersects with religious educational goals.

Although the literature increasingly discusses digital transformation, Society 5.0, and digital leadership, it remains fragmented in at least two respects. First, many studies treat digital leadership as a separate leadership issue rather than as part of curriculum governance.¹⁰ Second, the available work is still dominated by conceptual or review-level arguments, with limited micro-level evidence on how planning, implementation, supervision, and evaluation are coordinated in a single faith-based school.¹¹ Recent systematic reviews explicitly note that digital leadership in education still lacks a comprehensive conceptual understanding and that future research should clarify its definition, effects, and influencing factors.¹² This gap is even more visible in Islamic education, where empirical work on curriculum management under digital pressure remains limited.

This study examines how adaptive managerial strategies are implemented in the development of the Islamic education curriculum at MA Nurur Rahmah in the Society 5.0 era. More specifically, it asks how managerial processes are structured, which structural and socio-technical factors shape curriculum effectiveness, and how adaptive strategies are

⁷ Judy Dasruth, Suraiya Rathankoomar Naicker, and Clive Smith, "Teachers' Perceptions of Principals' Digital Leadership Practices in a School District in a Developing Country," *Social Sciences & Humanities Open* 10 (2024): 101192, <https://doi.org/10.1016/j.ssaho.2024.101192>.

⁸ Hera Antonopoulou et al., "Teachers' Digital Leadership and Competencies in Primary Education: A Cross-Sectional Behavioral Study," *Education Sciences* 15, no. 2 (February 10, 2025): 215, <https://doi.org/10.3390/educsci15020215>.

⁹ Meiyu Zeng, Kenny S. L. Cheah, and Zuraidah Abdullah, "The Influence of School Principals' Digital Leadership on Teachers' Competency in Integrating Artificial Intelligence: A Systematic Thematic Review," *Frontiers in Education* 10 (September 26, 2025), <https://doi.org/10.3389/educ.2025.1655967>.

¹⁰ Haleem et al., "Understanding the Role of Digital Technologies in Education: A Review"; Turgut Karakose et al., "A Review of the Conceptual Structure and Evolution of Digital Leadership Research in Education," *Education Sciences* 14, no. 11 (October 26, 2024): 1166, <https://doi.org/10.3390/educsci14111166>.

¹¹ Yuanyuan Peng et al., "Charting the Evolving Landscape of Digital Leadership in Education: A Systematic Literature Review," *Journal of Infrastructure Policy and Development* 8, no. 8 (August 27, 2024): 5925, <https://doi.org/10.24294/jipd.v8i8.5925>; Zeng, Cheah, and Abdullah, "The Influence of School Principals' Digital Leadership on Teachers' Competency in Integrating Artificial Intelligence: A Systematic Thematic Review."

¹² Karakose et al., "A Review of the Conceptual Structure and Evolution of Digital Leadership Research in Education."

enacted to integrate technological responsiveness with the internalization of Islamic values. By addressing these questions, the study aims to contribute an empirically grounded account of curriculum governance as an adaptive process rather than a purely administrative one.

METHOD

This study adopts a qualitative approach within an interpretivist paradigm, aiming to understand how curriculum management is constructed, negotiated, and enacted by institutional actors in a specific educational context. A single intrinsic case study design was employed to enable in-depth exploration of adaptive managerial practices within a bounded system. This design is appropriate for generating analytical insight into complex social processes situated in real-life settings rather than for statistical generalization.¹³

The study was conducted at MA Nurur Rahmah Pragaan Sumenep Madura, Indonesia, between January and March 2025. The site was selected purposively as an information-rich, revelatory case in which curriculum restructuring and digital adaptation are actively undertaken within a faith-based institutional framework. The school represents a context in which tensions between technological integration and the internalization of Islamic values are explicitly negotiated, making it analytically relevant for examining adaptive curriculum governance in the Society 5.0 era.

Participants were selected using purposive sampling based on their direct involvement in curriculum governance and implementation. A total of 12 participants were included: one Principal, one vice principal for curriculum, three members of the curriculum development team, and seven Islamic education teachers. Selection criteria included (1) formal responsibility in curriculum planning or implementation, (2) engagement in teaching practices influenced by digital transformation, and (3) willingness to participate in in-depth inquiry. Participants' professional experience ranged from 5 to 22 years, ensuring diverse perspectives on institutional practices.

Data were collected through three complementary methods to ensure depth and triangulation. Semi-structured interviews were conducted to explore participants' perspectives on managerial processes, digital adaptation, and value integration. Interview protocols were developed based on the research questions and informed by concepts of adaptive management and curriculum governance. Interviews lasted 60-90 minutes, were conducted in Bahasa Indonesia, audio-recorded with consent, transcribed verbatim, and translated into English for analysis.

Participant observation was carried out across eight sessions (90–120 minutes each), including curriculum planning meetings, classroom instruction, and evaluation activities. Observations focused on leadership practices, decision-making processes, teacher–student interactions, and the use of digital tools. Field notes were recorded using a structured

¹³ John W Creswell and Cheryl N Poth, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (London: Sage publications, 2016); R K Yin, *Case Study Research and Applications: Design and Methods* (New York: SAGE Publications, 2017), <https://books.google.co.id/books?id=uX1ZDwAAQBAJ>.

observation protocol and expanded immediately after each session to preserve contextual richness.

Document analysis examined institutional artifacts, including curriculum plans, lesson plans (RPPs), supervision reports, digital learning guidelines, and evaluation records. These documents provided insight into formal policy structures and complemented the data obtained from interviews and observations. Data collection followed an iterative process and continued until thematic saturation was reached, as indicated by recurring patterns and the absence of new categories.

Data analysis was conducted using a thematic approach supported by QualCoder 3.8, an open-source qualitative data analysis software. QualCoder was used to facilitate systematic coding, organization of large datasets, and the development of an audit trail, while all interpretive decisions remained researcher-driven. All transcripts, observation notes, and documents were imported into QualCoder and analyzed through a multi-stage coding process. In the first stage, open coding was conducted to identify meaningful units related to curriculum management, digital integration, and value internalization.¹⁴ This stage produced an initial set of codes representing recurrent concepts across the dataset.

Axial coding involved grouping related codes into broader categories and identifying relationships among them. Using QualCoder's code system and categorization features, codes were organized into higher-level categories: managerial processes (planning, implementation, evaluation), influencing factors (teacher competence, infrastructure, parental involvement), and adaptive strategies. Selective coding and theme development were undertaken to construct overarching themes aligned with the research questions. Cross-case comparisons were conducted within the dataset by examining patterns across participant roles (leadership versus teachers) and data sources (interviews, observations, documents). Analytical memos were recorded throughout the process to capture reflections, emerging interpretations, and conceptual linkages.

To ensure the rigor of the study, several strategies were employed. Triangulation was achieved by integrating multiple data sources and methods. Member checking was conducted with selected participants, including the Principal and teachers, to validate the accuracy of interpretations. Peer debriefing involved consultation with two experts in educational management to review coding structures and thematic development.¹⁵ QualCoder 3.8 supported trustworthiness by enabling systematic data organization and maintaining a transparent audit trail, allowing clear traceability from raw data to codes and themes. This enhanced the study's dependability and confirmability.

This study adhered to the Ethical Guidelines for Educational Research by the British Educational Research Association (2024), ensuring ethical considerations were embedded

¹⁴ Alexios Brailas, Elena Tragou, and Konstantinos Papachristopoulos, "Introduction to Qualitative Data Analysis and Coding with QualCoder," *American Journal of Qualitative Research* 7, no. 3 (April 29, 2023): 19–31, <https://doi.org/10.29333/ajqr/13230>.

¹⁵ Sirwan Khalid Ahmed, "The Pillars of Trustworthiness in Qualitative Research," *Journal of Medicine, Surgery, and Public Health* 2 (April 2024): 100051, <https://doi.org/10.1016/j.gmedi.2024.100051>.

throughout the research process.¹⁶ Participation was voluntary and based on informed consent, with all participants receiving clear information about the study's purpose, procedures, and their right to withdraw at any time without consequence. Confidentiality and anonymity were maintained through the use of coded identifiers, and all data were securely stored and used solely for research purposes. Particular attention was given to managing power relations within the school setting, especially between leadership and teachers, by conducting interviews in non-evaluative contexts and emphasizing that responses would not affect professional standing. Consistent with BERA principles, the study also adopted a reflexive approach to ethics, ensuring respect for participants' dignity, minimizing potential harm, and providing opportunities for participants to review and validate the interpretation of findings.

RESULTS AND DISCUSSION

Results

The analysis, conducted using QualCoder 3.8, generated a structured set of themes reflecting how curriculum governance is enacted within a digitally transforming Islamic educational context. The analytical process moved from initial coding to category development and finally to four overarching themes. The coding process further revealed recurring co-occurrence patterns across categories, particularly between leadership control, supervision practices, and value alignment, indicating a tightly coordinated yet centralized governance structure. In addition, frequent co-coding between "digital literacy constraints" and "instructional inconsistency" suggests that teacher readiness is a key determinant of variation in classroom implementation. To ensure transparency and traceability of analysis, the relationship between raw data, categories, and final themes is presented in Table 1.

Table 1. Code–theme structure derived from qualcoder analysis

Initial Codes	Categories	Final Themes
curriculum planning meetings; annual program alignment; syllabus refinement; RPP adjustment; integration of Islamic values; principal directives; teacher input in meetings	Curriculum planning processes	Structured but Leader-Centered Curriculum Governance
teaching schedule coordination; lesson implementation monitoring; supervision practices; instructional alignment; evaluation meetings; student performance review	Implementation and evaluation mechanisms	Structured but Leader-Centered Curriculum Governance
use of digital presentation tools; interactive applications; variation in teaching methods; reliance on textbooks; teacher confidence in technology; hesitation in digital use	Teacher digital competence	Uneven Digital Readiness Among Teachers
differences in digital literacy; adaptation to digital pedagogy; uneven instructional innovation; limited integration of digital tools	Pedagogical adaptation capacity	Uneven Digital Readiness Among Teachers
unstable internet connection; limited projectors; lack	Technological	Infrastructural and

¹⁶ British Educational Research Association, "Ethical Guidelines for Educational Research" (London: British Educational Research Association, 2018), www.bera.ac.uk.

Initial Codes	Categories	Final Themes
of digital devices; dependence on available resources; adjustment to infrastructure limitations	infrastructure constraints	Parent–School Linkage Constraints
irregular parental monitoring; limited school–parent communication; lack of digital platforms for parents; variation in home support; student engagement differences	Parent–school interaction	Infrastructural and Parent–School Linkage Constraints
teacher training workshops; semester-based professional development; mentoring for digital skills; leadership encouragement; policy for technology integration	Capacity-building strategies	Adaptive Managerial Responses in the Society 5.0 Context
development of digital reporting systems; monitoring of teaching practices; evaluation using digital tools; ongoing institutional adjustments	Digital governance and monitoring	Adaptive Managerial Responses in the Society 5.0 Context

The transformation from initial codes to higher-order themes reflects a consistent pattern in which managerial structure is formally established (as shown in Table 1). However, its enactment is mediated by contextual constraints and actor-level capacities. The findings converge into four major themes: (1) structured but leader-centered curriculum governance, (2) uneven digital readiness among teachers, (3) infrastructural and parent–school linkage constraints, and (4) adaptive managerial responses in the Society 5.0 context. This pattern was consistently observed across interviews, classroom observations, and document analysis, indicating strong triangulation of findings, as further detailed in Table 2.

Structured but Leader-Centered Curriculum Governance

The findings indicate that curriculum governance is organized through a formal, cyclical managerial structure comprising planning, implementation, and evaluation. This structure reflects institutional coherence; however, analysis reveals that governance remains strongly centered on leadership authority. Interview data show that the Principal plays a dominant role in defining curriculum direction, particularly in ensuring that technological integration remains aligned with Islamic values. One Principal noted, “*Curriculum planning in this school must always begin with Islamic values as the foundation. Technology is important, but it is only a tool to strengthen students’ moral and spiritual development.*” (P1)¹⁷

Observational data from planning meetings confirm that while teachers are involved in discussions, decision-making authority remains centralized. This pattern is further supported by document analysis of curriculum plans and supervision reports, which show consistent alignment with leadership directives. However, closer examination reveals a subtle tension between participatory procedures and centralized authority. While teachers are formally involved in planning processes, their contributions are often advisory rather than determinative, indicating that decision-making remains hierarchically structured despite the appearance of collaborative governance. This pattern suggests that participatory mechanisms function more as coordination tools than as mechanisms for distributed decision-making.

Uneven Digital Readiness Among Teachers

¹⁷ Interview with Principal (P1), January 20, 2025

The second theme highlights significant variation in teachers' digital competence and pedagogical adaptation. QualCoder coding patterns show frequent references to disparities in digital literacy, confidence, and instructional practice. Approximately half of the observed teachers used digital tools actively, while the remaining relied predominantly on conventional instructional methods, indicating a clear divide in digital pedagogical capacity. Classroom observations reveal contrasting teaching approaches. Some teachers utilize digital presentation tools and interactive applications, while others rely primarily on textbooks and board-based explanations. As one teacher explained, *"I still prefer using textbooks and the whiteboard because I am not fully confident with digital tools yet."* (T6)¹⁸

Interview data further indicate that reluctance to adopt digital tools is linked not only to technical limitations but also to uncertainty about integrating technology with Islamic pedagogical values. This divergence reflects not only differences in technical competence but also an underlying epistemological uncertainty regarding how digital tools can be meaningfully integrated into value-based instruction. As a result, digital integration is unevenly enacted, with institutional expectations not yet consistently translated into classroom practice.

Infrastructural and Parent–School Linkage Constraints

The third theme identifies structural constraints on curriculum implementation, particularly regarding technological infrastructure and parental involvement. Teachers consistently report limitations such as unstable internet access and insufficient digital devices. This is corroborated by classroom observations, where instructional practices are adjusted based on available resources. As one teacher noted: *"Sometimes the internet connection is unstable, so we return to conventional methods."* (T3)¹⁹

These findings indicate that technological integration is not solely a function of teacher willingness or policy direction but is structurally conditioned by resource availability, resulting in situational adaptation rather than consistent implementation. In addition, parental involvement in supporting student learning is described as inconsistent. Interview data suggest that students with stronger home supervision demonstrate higher engagement, particularly in completing digital assignments. However, document analysis indicates the absence of structured systems for sustained parent–school communication. The absence of structured digital communication mechanisms suggests a disconnect between institutional expectations and home-based learning environments, thereby weakening the continuity of value internalization beyond the classroom.

Adaptive Managerial Responses in the Society 5.0

In response to these challenges, the institution has implemented adaptive strategies to strengthen digital integration while maintaining its value-based orientation. One key strategy is to provide continuous professional development through training and mentoring programs. As noted by the vice principal: *"We conduct training every semester, but teachers' abilities are*

¹⁸ Interview with Teacher (T6), January 23, 2025

¹⁹ Interview with Teacher (T3), January 23, 2025

different. Some adapt quickly, while others need continuous mentoring.” (VP1)²⁰ Additionally, the school has begun developing digital monitoring and reporting systems to track instructional practices and student outcomes. Document analysis indicates that these initiatives are still in early stages of implementation but reflect an institutional commitment to digital transformation.

Despite the formal implementation of these strategies, their impact remains uneven, as reflected in the continued disparity in teacher practices and the limited institutionalization of digital monitoring systems. This indicates that adaptive governance is currently in a transitional phase, in which policy-level innovation has not yet fully translated into stable, system-wide practice.

Findings Integration

The relationships among these themes are synthesized in Figure 1, which presents a conceptual model of adaptive curriculum governance.

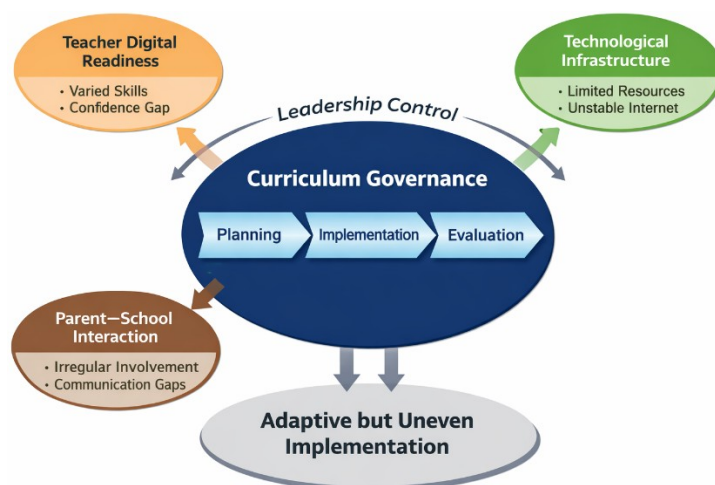


Figure 1. Conceptual model of adaptive curriculum governance in the Society 5.0 applied in MA Nurur Rahmah Pragaan Sumenep Madura, Indonesia

The model suggests that while leadership-driven managerial cycles provide structural coherence, the effectiveness of curriculum implementation is mediated by interacting constraints related to teacher readiness, infrastructure, and parental engagement. These mediating factors disrupt uniform implementation, leading to differentiated instructional practices across classrooms. Consequently, curriculum governance operates as an adaptive system in which formal alignment coexists with practical variability.

Table 2. Data triangulation matrix across themes and sources

Theme	Interview Evidence	Observation Evidence	Document Evidence
Structured but Leader-Centered Curriculum	Principal and teachers describe regular planning meetings, leadership	Observations of planning meetings show the Principal dominates participatory	Curriculum plans, RPP documents, and supervision reports

²⁰ Interview with Vice Principal for Curriculum (VP1), January, 23, 2025

Theme	Interview Evidence	Observation Evidence	Document Evidence
Governance	directives, and supervision practices, emphasizing alignment with Islamic values	discussion, but final decisions, supervision activities observed during instructional monitoring	indicate structured planning–implementation–evaluation cycles aligned with institutional goals
Uneven Digital Readiness Among Teachers	Teachers report differences in digital literacy, confidence, and ability to integrate technology into teaching.	Classroom observations show variation between digital-based instruction and conventional methods (textbook/board-based teaching)	Lesson plans (RPP) reveal inconsistent integration of digital tools and varied instructional design approaches.
Infrastructural and Parent–School Linkage Constraints	Teachers highlight unstable internet access and limited availability of digital devices Teachers report irregular parental monitoring and limited communication regarding student learning.	Observations confirm inconsistent use of digital tools due to technical limitations during lessons Limited observable interaction between the school and parents in daily activities	Facility records and institutional documents indicate an uneven distribution of technological resources Evaluation records and communication documents show the absence of structured digital platforms for parent engagement.
Adaptive Managerial Responses	The Principal and vice principal describe training programs, mentoring, and policies for digital integration.	Observations of training sessions and internal meetings show efforts to improve teacher digital competence.	Training schedules, policy documents, and early-stage digital reporting systems indicate institutional adaptation efforts.

To further demonstrate the robustness of findings, Table 2 presents triangulation across data sources, and Table 3 provides representative participant quotations supporting each theme. However, this model is most applicable to institutional contexts characterized by strong value-based governance and hierarchical leadership structures, and may operate differently in more decentralized or secular educational systems.

Table 3. Representative participant quotes supporting key themes

Theme	Participant	Representative Quote
Structured but Leader-Centered Curriculum Governance	Principal	<i>“Curriculum planning in this school must always begin with Islamic values as the foundation. Technology is important, but it is only a tool to strengthen students’ moral and spiritual development.”</i>
	Teacher (T2)	<i>“We are invited to give input during planning meetings, but the final direction usually comes from the principal, especially regarding how technology should be used.”</i>
	Vice Principal	<i>“My role is to ensure that all teachers follow the curriculum structure that has been agreed upon and that implementation remains consistent across subjects.”</i>
Uneven Digital Readiness Among Teachers	Teacher (T4)	<i>“Some teachers are already comfortable using digital platforms, but others still feel unsure, especially when combining technology with Islamic teaching materials.”</i>
	Teacher (T6)	<i>“I still prefer using textbooks and the whiteboard because I am not fully confident with digital tools yet.”</i>
Infrastructural Constraints	Teacher (T3)	<i>“We are encouraged to use digital media, but sometimes the internet connection is unstable, so we return to conventional methods.”</i>

Theme	Participant	Representative Quote
Weak Parent–School Linkage	Teacher (T5)	<i>“Not all classrooms have the same facilities, so we have to adjust our teaching depending on what is available.”</i>
	Teacher (T1)	<i>“Some parents actively monitor their children’s learning, but many do not, especially when assignments are given through digital platforms.”</i>
	Teacher (T7)	<i>“There is still no structured system to communicate regularly with parents about students’ progress.”</i>
Adaptive Managerial Responses	Vice Principal	<i>“We conduct training every semester, but teachers’ abilities are different. Some adapt quickly, while others need continuous mentoring.”</i>
	Principal	<i>“We are starting to develop digital reporting systems so that teaching and student progress can be monitored more effectively.”</i>

The results demonstrate that curriculum governance at MA Nurur Rahmah is structurally coherent and strongly aligned with leadership directives, yet its adaptive capacity is unevenly realized in practice. The interaction between centralized control and contextual constraints—particularly disparities in teacher digital readiness, infrastructural limitations, and weak socio-digital linkages with parents—produces a pattern of implementation that is simultaneously adaptive and fragmented. These findings position curriculum implementation not as a linear execution of policy but as a negotiated and context-dependent process shaped by both institutional design and operational realities.

Discussion

The findings of this study reveal a fundamental governance paradox in the development of Islamic education curricula amid digital transformation. While curriculum management at MA Nurur Rahmah demonstrates structural coherence through a clearly defined cycle of planning, implementation, and evaluation, its adaptive capacity remains uneven due to centralized decision-making and contextual constraints. This indicates that curriculum governance in this context is neither fully traditional nor fully adaptive, but operates as a hybrid system characterized by centralized coordination and mediated adaptation. This pattern reinforces broader observations that digital transformation in education reshapes not only pedagogy but also institutional structures and governance dynamics.²¹ Unlike prior studies that treat digital leadership and curriculum development as separate domains, this study demonstrates that curriculum governance itself serves as the central mechanism through which digital transformation is negotiated in a faith-based educational context.

From a curriculum theory perspective, these findings extend beyond classical linear models such as Tyler’s objective-based framework, which emphasize alignment between goals, learning experiences, and evaluation. While such alignment is evident in the structured managerial cycle observed in this study, the results suggest that linear coherence alone is insufficient in digitally mediated environments. The presence of technological variability, teacher capacity differences, and socio-digital factors introduces dynamic conditions that require iterative and flexible governance mechanisms. This supports the argument that digital

²¹ Haleem et al., “Understanding the Role of Digital Technologies in Education: A Review.”

transformation in education remains theoretically underdeveloped in institutional implementation, particularly in translating systemic change into coherent practice.²²

This study also contributes to the literature on adaptive management by demonstrating that adaptation in educational settings does not necessarily emerge from decentralized autonomy, as often assumed in organizational theory. Instead, the findings indicate that adaptive practices are mediated through centralized leadership structures. The Principal's role in maintaining value alignment ensures institutional coherence, yet simultaneously constrains distributed experimentation among teachers. This suggests a modified form of adaptive governance in which flexibility is not broadly distributed but selectively enabled within hierarchical boundaries. Such a pattern challenges dominant assumptions that digital transformation inherently leads to more decentralized, participatory governance structures, as is often implied in discussions of digital leadership.²³

The role of leadership, therefore, emerges as both an enabling and constraining force in curriculum adaptation. Consistent with existing studies, leadership plays a critical role in shaping institutional direction, resource allocation, and professional development.²⁴ However, this study extends prior research by showing that strong leadership control may inadvertently limit the depth of pedagogical transformation. While teachers are encouraged to adopt digital tools, their autonomy to experiment and innovate remains bounded by centralized expectations, resulting in uneven implementation across classrooms. This dual leadership role highlights the need to balance strategic control with distributed pedagogical agency in digitally transforming educational environments. This finding contrasts with studies that frame digital leadership primarily as an enabler of distributed innovation, suggesting instead that in value-based institutions, leadership may simultaneously enable alignment while constraining pedagogical experimentation.

A further contribution of this study lies in its identification of fragmented digital pedagogical capacity among teachers. The variation observed in classroom practices reflects not only differences in technical competence but also deeper epistemological uncertainty regarding the integration of digital tools within value-based Islamic education. This finding suggests that digital transformation is not merely a matter of skill acquisition but involves the reinterpretation of pedagogical principles. Recent research on teacher development supports this view, emphasizing that digital competence is closely linked to self-efficacy, pedagogical alignment, and sustained professional learning processes.²⁵ Teachers who hesitate to adopt

²² Mukul and Büyüközkan, "Digital Transformation in Education: A Systematic Review of Education 4.0."

²³ Asem S. Obied, "Digital Leadership in the Academic Environment: A Systematic Literature Review," *Social Sciences & Humanities Open* 11 (2025): 101542, <https://doi.org/10.1016/j.ssaho.2025.101542>; Afam Uzorka and Kagezi Kalabuki, "Educational Leadership in the Digital Age: An Exploration of Technology's Impact on Leadership Practices," *Social Sciences & Humanities Open* 11 (2025): 101581, <https://doi.org/10.1016/j.ssaho.2025.101581>.

²⁴ Zeng, Cheah, and Abdullah, "The Influence of School Principals' Digital Leadership on Teachers' Competency in Integrating Artificial Intelligence: A Systematic Thematic Review."

²⁵ Yin Ru Shi, Kuen Fung Kenneth Sin, and Yi Qing Wang, "Teacher Professional Development of Digital Pedagogy for Inclusive Education in Post-Pandemic Era: Effects on Teacher Competence, Self-Efficacy, and Work Well-Being," *Teaching and Teacher Education* 168 (December 2025): 105230, <https://doi.org/10.1016/j.tate.2025.105230>.

digital tools are therefore not simply lacking competence; they are navigating tensions between traditional modes of knowledge transmission and emerging digital modalities.

In addition to internal institutional factors, the study underscores the significance of external socio-digital conditions, particularly infrastructural capacity and parent–school interaction. The findings demonstrate that technological integration is constrained not only by teacher readiness but also by material resources such as internet stability and device availability. Moreover, the absence of structured digital communication between schools and parents weakens the continuity of learning and the internalization of values beyond the classroom. This aligns with broader research indicating that digital transformation in education is deeply influenced by systemic and contextual inequalities, particularly in emerging and resource-constrained environments.²⁶

Within the broader framework of Society 5.0, these findings provide a more grounded interpretation of what human-centered digital transformation entails in educational contexts. Rather than representing a seamless integration of technology and human values, the study shows that such integration is uneven, negotiated, and mediated by institutional structures. The Society 5.0 paradigm emphasizes aligning technological advancement with human well-being and ethical values; however, realizing this vision requires governance systems capable of managing complexity and disparity.²⁷ This indicates that the challenge of Society 5.0 in education lies less in technological adoption and more in the reconfiguration of governance structures capable of integrating innovation with institutional values.

Based on these insights, this study advances a conceptual model of centralized adaptive curriculum governance, offering a theoretically grounded explanation of how digital transformation is mediated within value-based educational systems (see Figure 1). This model is characterized by three key features: (1) strong leadership-driven coordination ensuring structural coherence and value alignment; (2) mediated adaptation, in which innovation is introduced through controlled institutional mechanisms rather than decentralized experimentation; and (3) uneven implementation outcomes resulting from disparities in teacher capacity, infrastructure, and stakeholder engagement. This model extends existing theories of curriculum management and adaptive governance by demonstrating how digital transformation interacts with value-based educational systems in non-linear and context-dependent ways.²⁸ It also resonates with broader discussions on Education 5.0 and Industry 5.0, which emphasize the need to integrate technological innovation with human-centered and value-oriented approaches to education.²⁹

²⁶ Vernika Agarwal, Palak Verma, and Giulio Ferrigno, “Education 5.0 Challenges and Sustainable Development Goals in Emerging Economies: A Mixed-Method Approach,” *Technology in Society* 81 (June 2025): 102814, <https://doi.org/10.1016/j.techsoc.2025.102814>.

²⁷ Shahidi Hamedani et al., “Transitioning towards Tomorrow’s Workforce: Education 5.0 in the Landscape of Society 5.0: A Systematic Literature Review.”

²⁸ Majid Kamran, “Educational Leadership in a Digital Era: Navigating Challenges and Opportunities,” *AL-ĪMĀN Research Journal* 3, no. 01 (March 7, 2025): 188–99, <https://doi.org/10.63283/54wxa275>.

²⁹ Bianca Ifeoma Chigbu and Sicele Leonard Makapela, “AI in Education, Sustainability, and the Future of Work: An Integrative Review of Industry 5.0, Education 5.0, and Work 5.0,” *Journal of Open Innovation: Technology, Market, and Complexity* 11, no. 4 (December 2025): 100645, <https://doi.org/10.1016/j.joitmc.2025.100645>.

In practice, the findings suggest that Islamic educational institutions should move beyond viewing digital integration as a technical intervention and instead treat it as an organizational and governance challenge. Professional development programs should integrate technological training with pedagogical and theological reflection, enabling teachers to align digital tools with Islamic educational values.³⁰ At the same time, school leadership should consider strategies to gradually expand teacher autonomy in instructional innovation while maintaining alignment with core values. Furthermore, strengthening digital communication channels between schools and parents is essential to support consistent learning experiences across institutional and home environments.

This study demonstrates that curriculum governance in the Society 5.0 era is best understood as an adaptive yet constrained process shaped by the interaction between leadership structures, teacher capacities, infrastructural conditions, and socio-cultural contexts. By articulating the dynamics of centralized adaptive governance, the study contributes to a more nuanced understanding of how educational institutions can navigate the complexities of digital transformation while preserving their foundational values.

This study is limited by its focus on a single case within a specific Islamic educational context, thereby constraining the generalizability of its findings. In addition, while the study provides in-depth insight into curriculum governance processes, it does not quantitatively measure student learning outcomes or long-term institutional impact. Future research may extend this work through comparative studies across multiple institutions or by integrating mixed-method approaches to examine the relationship between governance structures and educational outcomes.

CONCLUSION

This study demonstrates that curriculum governance in Islamic education under conditions of digital transformation operates as a form of centralized adaptive governance, in which structural coherence is maintained through strong leadership. At the same time, adaptation occurs in mediated and uneven ways. Rather than representing a shift toward fully decentralized or flexible systems, the findings reveal a governance configuration in which planning, implementation, and evaluation remain tightly coordinated. However, their implementation is shaped by disparities in teacher digital readiness, infrastructural limitations, and weak socio-digital linkages with parents. In this sense, curriculum implementation emerges not as a linear execution of policy but as a negotiated, context-dependent process. By conceptualizing curriculum governance as a hybrid system of centralized control and constrained adaptation, this study extends existing literature on digital leadership and adaptive management, which often assumes that digital transformation inherently leads to distributed autonomy and pedagogical innovation.

The implications of this study suggest that effective curriculum adaptation in the Society 5.0 context requires more than technological integration; it demands the reconfiguration of

³⁰ Nadeem A. Memon, Mohamad Abdalla, and Dylan Chown, "Laying Foundations for Islamic Teacher Education," *Education Sciences* 14, no. 10 (September 25, 2024): 1046, <https://doi.org/10.3390/educsci14101046>.

governance structures capable of balancing value alignment with distributed pedagogical capacity. For Islamic educational institutions in particular, this involves integrating digital innovation with ethical and religious frameworks while gradually expanding teacher agency in instructional practice. At a broader level, the findings indicate that the realization of Society 5.0 in education depends less on technological readiness and more on institutional capacity to manage complexity across organizational, pedagogical, and socio-cultural dimensions. Future research should examine how variations in governance structures across educational contexts influence the relationships among digital transformation, value integration, and instructional practice, particularly through comparative and multi-site studies.

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