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Assessing School Readiness for Artificial Intelligence Curriculum Transformation: Evidence from Muhammadiyah Schools in Indonesia

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Abstract
This study aimed to analyze the perceived institutional readiness of Muhammadiyah schools for AI-based curriculum transformation using an exploratory sequential mixed methods design (QUAL→QUAN). The qualitative phase comprised interviews, observations, and document analysis to explore contextual issues surrounding school readiness and to complement the quantitative findings. The quantitative phase involved a survey of 120 principals, vice principals, teachers, and administrative staff from ten Muhammadiyah schools in Jakarta. Quantitative and qualitative findings were integrated through connecting and merging procedures to generate meta-inferences regarding institutional readiness. The results indicate that respondents perceived the overall level of institutional readiness to be moderate (M = 3.42), although readiness varied across institutional dimensions. Participants reported positive attitudes toward AI integration in education; however, teacher competence in AI, digital infrastructure, and institutional policy implementation remained insufficient to support systematic curriculum transformation. Qualitative findings further revealed that while school leaders demonstrated strong commitment to digital innovation, AI implementation was generally fragmented and remained focused on administrative rather than pedagogical practices. These findings highlight a gap between institutional commitment and operational implementation, underscoring the need for sustained teacher professional development, improved digital infrastructure, and comprehensive institutional policies aligned with Muhammadiyah educational values. The study contributes to the conceptual understanding of institutional readiness for AI-based curriculum transformation in Indonesian schools.

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Introduction

The development of Artificial Intelligence (AI) has driven fundamental changes across various sectors, including education. AI is no longer perceived merely as a future technology; rather, it has become an integral part of modern educational practices through a wide range of learning innovations. Over the past decade, the application of AI in education has expanded in the form of robotic systems, intelligent tutoring systems, and educational chatbots (Gobert et al., 2013; Nye, 2014; Poh et al., 2016; Smutny & Schreiberova, 2020). In addition, online learning environments and intelligent guidance systems have enabled the availability of extensive data on learning activities, academic performance, and student outcomes (Daniel, 2015). These developments indicate that AI has evolved into a strategic instrument capable of enhancing learning effectiveness while simultaneously reshaping school curriculum design.

The growing presence of AI has important implications for curriculum transformation. Schools are expected not only to use digital technologies but also to prepare students to understand and use AI critically and ethically. AI literacy therefore extends beyond technical knowledge to include understanding AI concepts, applying AI tools, evaluating AI-generated outputs, and recognizing ethical implications (Ng et al., 2021). Recent curriculum studies demonstrate that AI education can integrate knowledge, skills, attitudes, problem solving, project-based learning, and ethical reasoning. Kim et al. (2021) proposed an elementary AI curriculum centered on AI knowledge, skills, and attitudes, while Williams et al. (2023) showed that project-based curricula can combine technical learning with embedded ethics. Park and Kwon (2024) further demonstrated that AI can be systematically integrated into middle-school technology education through curriculum alignment and problem-solving activities.

The present study is theoretically informed by the AI readiness framework and the Technological Pedagogical Content Knowledge (TPACK) perspective. Wang et al. (2023) conceptualized teachers' AI readiness through four dimensions—cognition, ability, vision, and ethics—showing that readiness involves more than willingness to adopt technology. Yue et al. (2024) similarly found that K–12 teachers' readiness depends on the interaction of technological, pedagogical, and content knowledge, with notable gaps in AI-related content and technological knowledge. Building on these perspectives, this study extends readiness from teachers to institutions. School readiness is therefore understood as the collective capacity to support AI-based curriculum transformation through competent human resources, digital infrastructure, curriculum preparedness, organizational leadership and policy, ethical governance, and continuous professional development.

International evidence nevertheless suggests that readiness remains uneven. Studies of K–12 teachers identify self-efficacy, attitudes, technological competence, professional development, and institutional conditions as determinants of AI preparedness. Research in South Africa, for example, found that technology integration, social influence, attitudes, and perceived self-efficacy significantly influenced teachers' preparedness (Ayanwale, Ntshangase, et al., 2024), while Yue et al. (2024) identified substantial knowledge gaps despite positive attitudes toward AI education. UNESCO's guidance (Miao & Holmes, 2023) also emphasizes that responsible AI adoption requires human capacity, institutional policy, privacy protection, ethical validation, and appropriate pedagogical use, rather than technological access alone. These findings indicate that AI integration is an organizational as well as a technological challenge.

In Indonesia, this challenge is intensified by uneven digital capacity among schools. Recent evidence suggests that teachers generally recognize the educational potential of AI but continue to face limitations in technical competence, practical experience, confidence, and institutional support. Islamiah et al. (2024) found that elementary teachers' AI readiness was associated with AI literacy, self-efficacy, perceived usefulness, ease of use, and institutional support. Kurniawan and Maryani (2025), examining a Muhammadiyah primary school in Yogyakarta, reported strong optimism and innovativeness toward AI but also discomfort and insecurity related to limited training and data-privacy concerns. Research on Muhammadiyah schools likewise highlights infrastructure, teacher development, institutional commitment, and integration with Islamic educational values (Novanto et al., 2025). Thus, technological adoption alone does not ensure sustainable curriculum transformation.

Muhammadiyah schools provide a strategically important context because they combine academic development, Islamic values, and educational reform. AI-based curriculum transformation within this network must therefore address two interconnected demands: strengthening institutional capacity for technological innovation and ensuring that AI use remains consistent with pedagogical, ethical, and religious values. Readiness cannot be reduced to devices, connectivity, or technical skills; it also involves leadership commitment, curriculum flexibility, professional learning, responsible data practices, ethical safeguards, and alignment between technological change and institutional identity.

Despite growing scholarship, several gaps remain. International studies have predominantly examined AI literacy, specific AI curricula, technology acceptance, or individual teacher readiness rather than whole-school readiness for systemic curriculum transformation. Indonesian studies are still largely concentrated on teacher perceptions and classroom-level technology adoption, providing limited evidence about the interaction of human resources, infrastructure, curriculum, leadership, policy, and ethical governance. Moreover, research on AI-based curriculum transformation within faith-based educational networks, particularly Muhammadiyah schools, remains scarce. Consequently, little is known about how such institutions can develop AI readiness while preserving their value-based educational orientation.

This study addresses these gaps by conceptualizing AI-based curriculum transformation as a systemic institutional process rather than the isolated adoption of AI applications. Its novelty lies in integrating technological, pedagogical, organizational, curricular, and ethical dimensions of readiness within the distinctive context of Muhammadiyah education. Specifically, this study aims to analyze Muhammadiyah schools' readiness for AI-based curriculum transformation by examining teacher competence, digital infrastructure, curriculum preparedness, organizational leadership and policy, and ethical governance; identify major institutional strengths and readiness gaps; and formulate strategic priorities for sustainable, responsible, and contextually relevant AI integration. The study is expected to contribute empirical evidence and a practical framework for moving from fragmented AI adoption toward coherent curriculum transformation.

Method

This study employed a mixed methods approach using an explanatory sequential design to obtain a comprehensive understanding of Muhammadiyah schools' readiness for Artificial Intelligence (AI)-based curriculum transformation. The study was conducted in two consecutive phases. The first phase involved a quantitative survey to assess school readiness across four dimensions: human resource competence, digital infrastructure, curriculum and instructional readiness, and institutional policy and leadership support. The questionnaire was developed based on an extensive review of the literature and validated through expert judgment and pilot testing. The second phase consisted of qualitative interviews, field observations, and document analysis conducted to explain, contextualize, and deepen the interpretation of the quantitative findings. Integration of the quantitative and qualitative results was undertaken during the interpretation stage through triangulation and joint display comparison to generate comprehensive meta-inferences regarding institutional readiness.

The study was conducted in Muhammadiyah primary and secondary schools in the Special Capital Region of Jakarta (DKI Jakarta) in 2026. The selection of this location was based on Jakarta's characteristics as a region with a relatively more advanced level of educational technology adoption

compared with other areas in Indonesia, while also demonstrating diverse school conditions in terms of resources and institutional management.

The study was conducted in Muhammadiyah primary and secondary schools in the Special Capital Region of Jakarta (DKI Jakarta). During the study period, the sampling frame comprised 70 Muhammadiyah schools, consisting of 32 primary schools (SD), 24 junior secondary schools (SMP), and 14 senior secondary schools (SMA). The target population for the quantitative phase consisted of principals, vice principals, teachers, and administrative staff employed in these schools. A purposive sampling strategy was employed to capture variation in institutional characteristics across participating schools. Selection considered differences in digital infrastructure, leadership support for educational innovation, and engagement in digital transformation initiatives, rather than identifying only highly prepared schools. Based on these criteria, ten schools were selected as research sites. Eligible educational personnel within the selected schools were invited to participate, resulting in a total of 120 respondents. Although purposive sampling does not permit statistical generalization, the inclusion of schools with diverse institutional characteristics provides analytical insights into factors influencing school readiness for AI-based curriculum transformation within the Muhammadiyah school context.

Data were collected through three main techniques: questionnaires, in-depth interviews, and field observations. The questionnaire instrument was developed based on the literature review and findings from the initial exploratory phase. It consisted of 32 statements measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The instrument measured four main dimensions of school readiness: (a) human resource competence, (b) digital facilities and infrastructure, (c) curriculum and instructional readiness, and (d) institutional policy and support. Semi-structured interviews were conducted with principals, teachers, and school administrators to explore adaptation strategies, perceptions of AI, implementation barriers, and opportunities for developing AI-based curricula. Observations were carried out to assess the actual condition of school technological infrastructure, the use of digital devices, internet connectivity, and technology-based teaching practices in classrooms.

The instrument was developed based on an extensive review of the literature on AI readiness, digital transformation, and school readiness, and organized into four dimensions: (1) human resource competence, (2) digital infrastructure, (3) curriculum and instructional readiness, and (4) institutional policy and leadership support. The initial item pool consisted of 32 items. Content relevance, clarity, and alignment with the study objectives were reviewed by three experts in educational management, educational technology, and curriculum development. Their qualitative feedback was incorporated to improve wording, eliminate ambiguities, and ensure conceptual alignment across the four dimensions. The revised instrument was pilot-tested with 30 educational personnel from Muhammadiyah schools who were not included in the main study. Pilot testing indicated good internal consistency (Cronbach's $\alpha = 0.89$), supporting the reliability of the instrument for data collection.

Table 1. Instrument Blueprint

Dimension	Indicators	No. of Items
Human Resource Competence	AI literacy, pedagogical competence, professional development	8
Digital Infrastructure	Internet connectivity, hardware, software, technical support	8

Curriculum and Instructional Readiness	AI integration, instructional design, AI-assisted assessment	8
Institutional Policy and Leadership Support	Leadership commitment, institutional policy, governance, strategic planning	8
Total		32

Quantitative data were analyzed using descriptive statistics, including frequencies, percentages, means, and standard deviations, to describe the level of school readiness across each dimension. Readiness levels were classified into three categories based on the mean scores obtained from the five-point Likert scale. Following the equal-interval classification method, mean scores of 1.00–2.33 were categorized as low, 2.34–3.66 as moderate, and 3.67–5.00 as high. This classification was adopted to facilitate consistent interpretation of institutional readiness across the measured dimensions. Qualitative data were analyzed using thematic analysis through the following stages: (1) data transcription, (2) repeated reading, (3) open coding, (4) category grouping, (5) identification of major themes, and (6) interpretation of findings. The analysis was conducted iteratively to ensure depth of meaning and consistency across themes.

The integration of quantitative and qualitative data was carried out during the interpretation stage using triangulation and joint display comparison techniques. This approach enabled the quantitative survey results to be compared with findings from interviews and observations, thereby producing a more comprehensive understanding of the readiness of Muhammadiyah schools to face AI-based curriculum transformation.

All participants were informed about the purpose of the study and their right to participate voluntarily. Informed consent was obtained prior to data collection. The identities of respondents and institutions were kept confidential and used solely for academic purposes.

Result and Discussion

Respondent Profile

A total of 120 respondents from 10 Muhammadiyah primary and secondary schools in the Special Capital Region of Jakarta (DKI Jakarta) participated in this study. The respondents consisted of school leaders, teachers, and administrative staff who were selected to represent managerial, pedagogical, and operational perspectives in assessing school readiness to face Artificial Intelligence (AI)-based curriculum transformation.

Table 2. Demographic Profile of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Position	Principal	10	8.3
	Vice Principal	14	11.7
	Teacher	78	65.0
	Administrative Staff	18	15.0
Education Level	Elementary School	55	45.8
	Junior High School	38	31.7
	Senior High/Vocational School	27	22.5
Years of Service	< 5 years	29	24.2
	5–10 years	47	39.2
	> 10 years	44	36.6
AI/Digital Training Experience	Yes	72	60.0
	No	48	40.0

The majority of respondents were teachers (65.0%), indicating that the findings primarily represent the perspectives of the main actors in the teaching and learning process within schools. Based on educational level, most respondents came from primary schools (45.8%), followed by junior secondary schools (31.7%) and senior secondary/vocational schools (22.5%).

In terms of work experience, most respondents had served for 5–10 years (39.2%) and more than 10 years (36.6%), suggesting that they possessed a relatively strong understanding of institutional dynamics within schools. In addition, 60.0% of respondents had participated in training related to educational technology or digital transformation, while the remaining 40.0% had never attended such training. These findings indicate that human resource capacity building remains an important area in supporting readiness for the implementation of AI-based curricula.

Overall Readiness Score

Descriptive statistical analysis indicated that respondents perceived the overall level of institutional readiness for Artificial Intelligence (AI)-based curriculum transformation in Muhammadiyah schools to be moderate (M = 3.42 on a five-point Likert scale). This finding suggests that, from the perspectives of principals, vice principals, teachers, and administrative staff, participating schools have established an initial foundation for adopting AI-based curriculum innovation. However, respondents also identified several strategic areas requiring further strengthening, particularly in teacher AI competence, digital infrastructure, and institutional policy support.

Table 3. Overall Readiness Level of Muhammadiyah Schools toward AI-Based Curriculum Transformation

Indicator	Mean	SD	Category
Human Resource Competency	3.38	0.64	Moderate
Digital Infrastructure	3.29	0.71	Moderate
Curriculum and Learning Readiness	3.47	0.58	High
Institutional Policy and Leadership Support	3.55	0.61	High
Overall Mean Score	3.42	0.64	Moderately Ready

These findings indicate that institutional support and leadership obtained the highest score (M = 3.55), followed by curriculum and instructional readiness (M = 3.47). This suggests that some schools have developed organizational commitment and strategic awareness regarding the importance of AI-based educational transformation.

On the other hand, digital infrastructure received the lowest score (M = 3.29), followed by human resource competence (M = 3.38). This condition indicates that the main challenges are still related to technical readiness, the availability of facilities, and the strengthening of teachers' and administrative staff's capacities to utilize AI for teaching and learning.

Qualitative Themes

Qualitative interviews with principals, teachers, and administrative staff, supported by field observations and document analysis, were used to contextualize the quantitative findings on school readiness for AI-based curriculum transformation. Across data sources, participants consistently reported a positive institutional orientation toward digital innovation, alongside persistent constraints related to teacher competence, infrastructure, and policy implementation.

Most schools had established general policies and strategic orientations toward digital transformation; however, AI integration had not yet been systematically incorporated into curriculum planning or classroom instruction. Existing initiatives remained largely focused on digital devices, administrative systems, and general educational technology. As one principal explained, "At

the policy level, we are moving toward digitalization, but the implementation of AI in classrooms is still unstructured and has not yet become part of the formal curriculum" (P-01). Similarly, a teacher stated, "We already use technology in teaching, but we have not yet reached the stage of using AI specifically" (T-07). These findings indicate that readiness is currently stronger at the level of institutional awareness and administrative commitment than at the level of pedagogical implementation.

Insufficient AI-focused professional development also emerged as a major barrier. Participants reported that most training activities still addressed general digital tools rather than AI-based instructional design, assessment, personalized learning, or ethical use. One teacher noted, "The training we have attended is still general and focuses on educational technology; none has specifically addressed the use of AI in the classroom" (T-12). A principal similarly emphasized the need for "more targeted training, especially on how AI can be integrated into the teaching and learning process" (P-03). This finding suggests that strengthening teachers' AI literacy and pedagogical competence is essential for moving from institutional readiness toward effective classroom implementation.

Infrastructure readiness also varied considerably across schools. While some schools had adequate computer facilities, internet access, and digital presentation equipment, others continued to experience connectivity limitations and unequal access to technological resources. An administrative staff member explained, "Sometimes the internet runs smoothly, but at other times it is unstable. When many classes use it simultaneously, it usually becomes slower" (AS-04). Another teacher added, "Our school is relatively well prepared in terms of equipment, but not all teachers have equal access to utilize those facilities" (T-15). These findings demonstrate that AI readiness depends not only on institutional commitment but also on reliable and equitable access to technological infrastructure.

Despite these constraints, participants generally expressed optimism regarding the potential of AI to support teaching, assessment, material preparation, and administrative efficiency. One teacher stated, "In the future, AI will definitely be very helpful for teachers, especially in preparing materials and learning evaluations" (T-21), while a principal described AI as "a major opportunity to improve educational quality, so preparations need to begin now" (P-05). Nevertheless, respondents also emphasized that AI implementation should remain ethically supervised and should not diminish the central pedagogical role of teachers. Overall, the qualitative findings indicate that Muhammadiyah schools possess relatively strong institutional and social readiness for AI-based curriculum transformation, but implementation remains transitional. The main priorities are converting administrative commitment into concrete curriculum practices, strengthening AI-specific teacher competence, reducing infrastructure disparities, and establishing clear ethical and operational guidelines to ensure sustainable and responsible AI integration.

Integrated Findings

The integration of quantitative and qualitative findings indicates that the perceived institutional readiness of Muhammadiyah schools for Artificial Intelligence (AI)-based curriculum transformation is moderate (M = 3.42), although important variations exist across institutional dimensions. Quantitative findings showed relatively favorable scores for leadership commitment and institutional policy support, suggesting that respondents perceived school leaders to be supportive of digital transformation initiatives. However, qualitative interviews revealed a more nuanced picture. Although school leaders expressed strong commitment to educational digitalization, AI

implementation remained largely unstructured, fragmented, and dependent on individual initiatives rather than comprehensive institutional policies. In many cases, AI utilization was limited to administrative and operational activities rather than being systematically integrated into curriculum planning, teaching, and assessment. This discrepancy suggests that leadership commitment has not yet been translated into coherent institutional practices, highlighting the gap between strategic intention and operational implementation.

Table 4. Integration of Quantitative and Qualitative Findings

Quantitative Findings	Qualitative Evidence	Integrated Interpretation
Policy and leadership support scored highest (M = 3.55)	School principals demonstrated openness toward innovation and digital transformation.	Leadership serves as the primary capital in driving institutional change.
Curriculum readiness relatively high (M = 3.47)	Teachers have begun utilizing technology and digital learning methods.	Schools have entered a transitional stage toward AI-based learning.
Human resource competency moderate (M = 3.38)	Teachers require specialized AI training and technical mentoring.	Strengthening human resource capacity has become a priority need.
Digital infrastructure lowest (M = 3.29)	There are disparities in device availability and internet connectivity among schools.	Infrastructure remains the main barrier to equitable implementation.

The integrated findings indicate that leadership support and policy orientation constitute the primary strengths of Muhammadiyah schools. The highest quantitative score in this dimension is consistent with interview results showing that school leaders have promoted digitalization through institutional programs, internal policies, and motivational support for teachers. This suggests that AI-based curriculum transformation has strong potential to develop when supported by visionary leadership.

On the other hand, human resource competence remains a significant challenge. Although some teachers are already familiar with the use of digital platforms, interviews revealed that the utilization of AI for instructional design, automated assessment, and student data analysis is still limited. This condition is consistent with the quantitative score, which fell within the moderate category. Therefore, practice-based training and professional mentoring represent strategic priorities.

Digital infrastructure also requires serious attention. The lowest mean score in this dimension was reinforced by observations and interviews indicating disparities in access to devices, internet quality, and technical support among schools. These findings suggest that institutional readiness cannot be achieved through policy alone, but also requires sustainable technological investment.

In addition, the qualitative findings revealed a high level of optimism regarding the future of AI, despite the current limitations in technical readiness. Respondents viewed AI as an opportunity to improve administrative efficiency, personalize learning, and enhance the quality of educational services. This optimism constitutes important social capital, as it reflects organizational cultural acceptance of innovation.

Discussion

The findings indicate that Muhammadiyah schools demonstrate a moderate-to-ready level of preparedness for AI-based curriculum transformation, although readiness remains uneven across dimensions. Leadership support and institutional policy represent the strongest aspects, suggesting

that schools have developed a favorable organizational climate for digital innovation and curriculum reform. In contrast, teacher competence remains moderate, while digital infrastructure constitutes the most substantial constraint. Teachers generally express openness toward adaptive, interactive, and technology-enhanced learning and optimism regarding future AI adoption, despite acknowledging technical and professional limitations. Collectively, these results show that AI readiness should not be understood merely as technological availability; rather, it reflects the alignment of leadership, institutional policy, teacher competence, infrastructure, curriculum adaptability, ethical awareness, and organizational culture. The principal challenge is therefore to translate positive institutional orientation into sustainable pedagogical and organizational capacity.

The relatively strong leadership and policy dimensions are consistent with international research on AI readiness. Ayanwale et al. (2022), involving 368 in-service teachers, showed that perceived relevance, confidence, attitudes, and behavioral intention influence readiness to teach AI, with confidence predicting intention and perceived relevance strongly associated with readiness. This supports the present finding that institutional commitment constitutes an important foundation for transformation, but cannot independently guarantee classroom implementation. Leadership can establish strategic direction, legitimize innovation, allocate resources, and create opportunities for professional development; however, teachers must also recognize the pedagogical relevance of AI and possess sufficient confidence to use it effectively. In Muhammadiyah schools, this process has an additional institutional dimension because technological modernization must remain compatible with an educational mission that integrates academic advancement with Islamic values. Leadership therefore plays a dual role: facilitating innovation while ensuring that AI adoption remains consistent with institutional identity and educational objectives.

Teacher competence emerges as a more significant area requiring intervention. Although many teachers are familiar with conventional digital platforms, this familiarity does not necessarily constitute AI readiness. Sperling et al. (2024) emphasized that AI literacy in teacher education requires theoretical understanding, professional application, and ethical judgment, while noting that these dimensions remain insufficiently integrated into teacher preparation. Similarly, Ayanwale, Adelana, et al. (2024), studying 529 pre-service teachers, demonstrated that knowledge and understanding of AI were associated with competencies related to its application, ethical use, creation, detection, and problem-solving. These findings clarify the distinction between general digital literacy and AI-specific competence. Teachers may competently use learning management systems, presentation software, or communication platforms while still lacking the capacity to evaluate AI-generated information, design AI-supported learning, recognize algorithmic limitations, or address ethical concerns.

Recent evidence further demonstrates that effective AI competence cannot be developed through isolated technical workshops. Yau et al. (2025) found that teachers' competency in AI curriculum development evolved progressively, with experienced teachers increasingly connecting technological knowledge to pedagogical considerations. This finding supports sustained and differentiated professional development rather than one-time training. More importantly, Shen et al. (2026), using evidence from 46 teachers and 2,832 students, showed that AI knowledge alone was insufficient to optimize student outcomes; pedagogical AI knowledge played the more fundamental role, leading to the principle of "pedagogy first, technology second." Accordingly, professional development in Muhammadiyah schools should move beyond training on individual AI applications

toward pedagogical AI literacy, including decisions about when AI is appropriate, how it can support differentiation and assessment, how outputs should be verified, and how teachers can maintain professional and pedagogical agency.

Infrastructure presents another important implementation barrier. Unequal access to devices, unstable connectivity, and insufficient technical support may prevent positive attitudes and institutional policies from translating into sustained classroom use. Consequently, the findings reveal a potential gap between institutional aspiration and operational capacity. Related Indonesian studies involving Muhammad Sufian and colleagues provide contextual support for this interpretation. Pribowo et al. (2024) demonstrated that interactive digital modules become educationally meaningful when technological media are aligned with learning objectives, validated content, and learner needs. Likewise, Koderi et al. (2023) showed that an ADDIE-based audiovisual innovation integrating Lampung local wisdom became feasible and effective because technology was embedded within contextual instructional design. These studies reinforce the argument that infrastructure is necessary but insufficient: technological access must be accompanied by pedagogical design competence, institutional support, and appropriate learning objectives.

The curriculum findings further indicate that AI transformation does not necessarily require the immediate introduction of a separate AI subject. Teachers' openness to personalized resources, project-based activities, interactive learning, and adaptive assessment suggests that AI can initially be incorporated through curriculum infusion across existing subjects. Such integration should encompass conceptual knowledge, practical application, critical evaluation, ethical awareness, and problem-solving rather than technical operation alone (Ayanwale, Adelana, et al., 2024; Sperling et al., 2024). This approach is particularly relevant in Muhammadiyah education because curriculum innovation must remain connected to institutional values. Al Khansa et al. (2024) demonstrated that integrated learning can connect religious values with authentic educational contexts while encouraging participation and engagement. Similarly, Erlina et al. (2025) showed that curriculum innovation can combine disciplinary learning with gender-responsive and inclusive values rather than treating values as supplementary content. These studies suggest that AI integration in Muhammadiyah schools can be positioned at the intersection of technological competence, disciplinary learning, and value formation.

Respondents' optimism toward AI is an important organizational asset, yet it should not be equated with implementation readiness. Positive attitudes may coexist with limited understanding of data privacy, algorithmic bias, AI hallucination, intellectual property, transparency, academic integrity, and human oversight. Moreover, favorable responses may partly reflect social desirability or institutional expectations regarding modernization. Thus, the transition from acceptance to implementation requires opportunities for experimentation, mentoring, reflection, and continuous evaluation. Rokhman et al. (2024) similarly demonstrated that educational professionalism is strengthened through systematic processes of observation, development, implementation, and evaluation rather than through normative commitment alone. Applied to AI transformation, this means that schools require sustained professional-learning and supervision mechanisms that accompany teachers from initial AI literacy to actual classroom integration.

Theoretically, pedagogically, and from a policy perspective, these findings reinforce a multidimensional conception of AI readiness. Theoretically, the study extends conventional digital-readiness frameworks by demonstrating that AI readiness requires an additional pedagogical and

ethical layer. A school may possess adequate digital technology yet remain insufficiently prepared for AI if teachers lack AI-specific pedagogical judgment, critical literacy, and ethical competence. Pedagogically, sustained professional development should include conceptual AI literacy, prompt design and evaluation, verification of AI-generated content, AI-supported instructional design, adaptive assessment, academic integrity, data privacy, algorithmic bias, and responsible student use. Such programs should be supported through mentoring and academic supervision, with technology remaining subordinate to pedagogical objectives (Shen et al., 2026; Yau et al., 2025). At the policy level, Majelis Pendidikan Dasar Menengah dan Pendidikan Nonformal Muhammadiyah and school leaders should establish minimum AI-readiness standards encompassing infrastructure, professional development, acceptable-use guidelines, assessment integrity, privacy protection, and human oversight. This governance perspective is strengthened by Rustanto et al. (2026), who emphasize the importance of organizational governance and information quality in successful educational information systems. Although responsible AI governance may indirectly support students' psychological and social well-being, this study did not directly measure mental health, online identity, or social-media behavior; therefore, specific claims concerning psychological intervention or social-media regulation are beyond the empirical scope of the findings.

The novelty and contribution of this study lie in conceptualizing AI-based curriculum transformation in Muhammadiyah schools as an institutionally and value-sensitive process rather than merely a technology-adoption issue. The findings reveal a meaningful asymmetry in which organizational commitment may progress more rapidly than teacher capability and infrastructure. Accordingly, the study advances the concept of readiness as alignment, whereby meaningful AI transformation depends on the coordinated development of leadership commitment, policy, professional competence, technological capacity, pedagogical design, and institutional values. This contribution is particularly significant for faith-based education because it demonstrates how technological modernization can be negotiated without separating innovation from the moral and educational foundations of the institution. Related studies by Sufian et al. (2024) and Erlina et al. (2025) similarly indicate that educational outcomes and innovation remain embedded within social, affective, and value-oriented contexts. The present findings therefore reinforce the importance of maintaining human agency, ethical responsibility, and institutional identity within AI-enabled education.

Several limitations should frame the interpretation of these findings. First, readiness measures represent participating schools at a particular stage of AI adoption and do not demonstrate that AI implementation has already improved student learning. Second, self-reported optimism and perceived competence may differ from teachers' demonstrated AI capabilities or observed classroom practices. Third, substantial differences in school location, financial capacity, connectivity, staffing, and leadership may be obscured by aggregate readiness categories. Fourth, the study does not establish causal relationships among leadership, teacher competence, infrastructure, and curriculum readiness. Future research should therefore adopt longitudinal and mixed-method designs that follow schools from readiness assessment through implementation and evaluation. Teacher AI literacy should be assessed through performance-based measures alongside questionnaires, while comparative studies should examine whether leadership and infrastructure moderate implementation outcomes. Experimental or quasi-experimental research could evaluate the effects of AI-supported curriculum models on learning, creativity, problem-solving, and assessment quality.

Further research should also investigate student perspectives, algorithmic literacy, academic integrity, privacy, equity of access, and alignment between AI use and Muhammadiyah educational values. Such evidence would enable the proposed progression from AI literacy and teacher capacity development, through curriculum experimentation, to institutional governance and sustainable infrastructure to evolve from a readiness framework into an empirically validated model of AI-enabled educational transformation.

Conclusion

This study examined the institutional readiness of Muhammadiyah schools for Artificial Intelligence (AI)-based curriculum transformation by integrating quantitative and qualitative evidence concerning human resource competence, digital infrastructure, curriculum and instructional readiness, and institutional policy and leadership support. The findings indicate that overall readiness remains at a moderate level (M = 3.42), with institutional policy and leadership support emerging as the strongest dimension, followed by curriculum and instructional readiness, while human resource competence and digital infrastructure remain the principal areas requiring further development. Qualitative evidence further clarified that strong institutional commitment to digital transformation has not yet been consistently translated into systematic AI integration in curriculum planning, teaching, assessment, and classroom practice, revealing a substantive gap between strategic intention and operational implementation. Conceptually, these findings extend school-readiness perspectives by demonstrating that AI transformation should be understood as a multidimensional process of institutional alignment involving leadership, professional competence, technological capacity, pedagogical preparedness, ethical governance, and organizational values rather than technological adoption alone. Practically, Muhammadiyah schools should prioritize sustained AI-specific professional development, equitable improvement of digital infrastructure, curriculum-based AI integration, and institutional guidelines addressing responsible use, assessment integrity, privacy, and human oversight while maintaining alignment with Muhammadiyah educational values. Nevertheless, the findings should be interpreted within the study's methodological boundaries: the purposive sample was limited to ten Muhammadiyah schools in Jakarta, the readiness assessment relied substantially on participants' perceptions, and the cross-sectional design captured institutional conditions at a single point in the transformation process. Future research should therefore expand geographical and institutional coverage, employ longitudinal and comparative designs, incorporate objective and performance-based measures of AI implementation, and examine how leadership, infrastructure, teacher AI competence, and organizational governance interact over time to influence educational outcomes. By framing AI readiness as institutional alignment rather than technological availability, this study provides a theoretically grounded and practically applicable foundation for developing responsible, sustainable, and value-sensitive AI curriculum transformation in faith-based and comparable educational systems.

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