Edukasi Islami: Jurnal Pendidikan Islam, VOL: 15/No: 02 **P-ISSN: 2252-8970**
DOI: 10.30868/ei.v15i02.10039 **E-ISSN: 2581-1754**

Date Received	**:**	**December 2025**
Date Revised	**:**	**May 2026**
Date Accepted	**:**	**May 2026**
Date Published	**:**	**May 2026**

INTEGRATING ARTIFICIAL INTELLIGENCE AND HUMANISTIC VALUES IN ISLAMIC ELEMENTARY EDUCATION: A CASE STUDY AT MADRASAH IBTIDAIYAH NU MA'ARIF KARANGNANGKA

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Kata Kunci:

kecerdasan buatan; pendidikan humanistik; pendidikan Islam; etika digital; pembelajaran madrasah; studi kasus; AI etis; pendidikan dasar

ABSTRAK

Integrasi kecerdasan buatan (AI) dalam pendidikan menghadirkan peluang sekaligus tantangan etis, terutama dalam konteks pendidikan Islam yang menekankan nilai moral dan spiritual. Namun, kajian empiris mengenai bagaimana AI diintegrasikan secara humanistik dalam madrasah masih terbatas. Penelitian ini bertujuan untuk menganalisis proses integrasi AI dalam pembelajaran berbasis nilai Islam serta mengonstruksi model konseptual Humanistic–AI Learning pada pendidikan dasar Islam. Penelitian ini menggunakan pendekatan studi kasus kualitatif di Madrasah Ibtidaiyah NU Ma'arif Karangnangka, Banyumas, dengan melibatkan lima guru, satu kepala madrasah, dan tiga siswa yang dipilih secara purposif. Data dikumpulkan melalui wawancara semi-terstruktur, observasi partisipatif, dan analisis dokumen, kemudian dianalisis secara tematik menggunakan model interaktif Miles dan Huberman dengan triangulasi sumber dan metode. Temuan menunjukkan bahwa integrasi AI berlangsung sebagai proses negosiasi antara literasi teknologi dan nilai spiritual. Empat tema utama teridentifikasi: (1) konstruksi awal pemahaman AI sebagai alat instrumental, (2) praktik pedagogi digital yang bersifat parsial namun berorientasi humanistik, (3) ketegangan etis antara efisiensi teknologi dan integritas moral, serta (4) peran kepemimpinan spiritual dalam membingkai transformasi digital. Studi ini menawarkan kebaruan berupa Model Humanistic–AI Learning yang menempatkan relasi dialektis antara dimensi pedagogis, humanistik, dan spiritual sebagai dasar integrasi AI dalam pendidikan Islam. Model ini memperluas perspektif pembelajaran humanistik dengan menempatkan AI sebagai praktik etis-spiritual, serta memberikan implikasi praktis bagi pengembangan madrasah yang adaptif terhadap teknologi namun tetap berlandaskan nilai.

Keywords:

artificial intelligence; humanistic education; Islamic education; digital ethics; madrasah learning; case study; ethical AI; elementary education

ABSTRACTS

The integration of artificial intelligence (AI) in education presents both opportunities and ethical challenges, particularly within Islamic education, which emphasizes moral and spiritual values. However, empirical studies examining how AI is humanistically integrated in madrasah contexts remain limited. This study aims to analyze the process of AI integration within value-based Islamic pedagogy and to construct a conceptual Humanistic–AI Learning Model for Islamic elementary education. A qualitative case study was conducted at Madrasah Ibtidaiyah NU Ma'arif Karangnangka, Banyumas, involving five teachers, one principal, and three students selected purposively. Data were collected through semi-structured interviews, participatory observations, and document analysis, and analyzed thematically using Miles and Huberman's interactive model with triangulation. The findings indicate that AI integration operates as a negotiation between technological literacy and spiritual values. Four themes emerged: (1) the initial construction of AI as an instrumental tool, (2) partial yet humanistically oriented digital pedagogical practices, (3) ethical tensions between technological efficiency and moral integrity, and (4) the role of spiritual leadership in shaping digital transformation. This study contributes a novel Humanistic–AI Learning Model that conceptualizes a dialectical relationship between pedagogical, humanistic, and spiritual dimensions in AI integration. The model extends humanistic learning perspectives by framing AI as an ethical-spiritual practice and provides practical implications for developing ethically grounded, AI-ready madrasahs.

A. INTRODUCTION

The rapid advancement of artificial intelligence (AI) has fundamentally reshaped contemporary educational landscapes, not only transforming learning environments but also redefining the broader purposes of education in preparing individuals for an increasingly automated and uncertain future. As digital technologies become deeply embedded in classroom practices, education systems worldwide are undergoing a paradigm shift from knowledge transmission toward more dynamic, data-driven, and interactive learning ecosystems (Carvalho et al., 2022; Chaudhry & Kazim, 2022; Saini et al., 2025). The emergence of generative AI, machine learning, and adaptive learning systems has accelerated this transformation, requiring educators to reconsider the epistemological foundations of teaching and learning in the twenty-first century. In this context, learners are no longer positioned merely as passive recipients of information but as active co-creators in human–machine collaboration. Zhai et al. (2021) emphasize that AI in education has evolved from traditional intelligent tutoring systems toward sophisticated adaptive learning environments and learning analytics, enabling personalized yet ethically complex learning experiences.

Despite these technological advancements, contemporary scholarship consistently underscores that educational transformation must remain grounded in human-centered values. Yang (2025), through the SCALE taxonomy, highlights the importance of integrating AI literacy, creativity, and ethical reasoning to develop critically aware "AI natives." Similarly, Rahimi (2025) stresses the necessity of design thinking and digital competence among educators to navigate the complexity of AI integration. However, as Jarrahi et al. (2023) argue, technological sophistication must be accompanied by the humanization of knowledge, ensuring that AI systems augment rather than replace human reasoning. Bauer et al. (2025) further caution against the risk of cognitive over-reliance on AI, proposing the ISAR model to evaluate how AI influences cognitive processes in learning. These perspectives align with global policy frameworks such as UNESCO's *Futures of Education* (2021) and the European Commission's *Digital Education Action Plan 2021–2027* (2020), both of which emphasize the importance of ethics, inclusivity, and lifelong learning in digital transformation. Consequently, the integration of AI in education raises a critical question: how can technological innovation be aligned with moral, social, and spiritual development in increasingly machine-mediated learning environments (Benvenuti et al., 2023)?.

This question becomes particularly significant within the context of religious-based education, including Islamic education, where learning is not solely oriented toward cognitive development but also toward moral and spiritual formation. AI technologies offer considerable potential to enhance personalized learning, inclusivity, and reflective engagement through adaptive systems (Tapalova & Zhiyenbayeva, 2022). At the same time, they reshape the nature of teacher–student relationships and redefine the meaning of knowledge construction. Trifonova et al. (2024) demonstrate that AI-based learning environments can foster reflective learners when grounded in humanistic principles such as empathy, autonomy, and moral reasoning. Srinivasan (2022) further argues that AI should be positioned as a co-participant in the learning process rather than as a substitute for teachers, thereby maintaining the humanistic dimension of education. These perspectives resonate with Islamic educational values such as *insaniyyah* (humanity) and *rahmatan lil 'alamin* (universal compassion), which conceptualize knowledge as an integration of intellectual, ethical, and spiritual

dimensions. In this regard, the integration of AI into Islamic elementary education presents an opportunity to develop pedagogical models that harmonize technological competence with moral and spiritual cultivation (Baidoo-Anu & Owusu Ansah, 2023; Miniankou & Puptsau, 2024; Yadav, 2024).

In the Indonesian context, Islamic elementary education is primarily delivered through *Madrasah Ibtidaiyah* (MI), which are formal Islamic primary schools under the Ministry of Religious Affairs. Many of these institutions are affiliated with Nahdlatul Ulama (NU), one of the largest Islamic organizations in Indonesia, which emphasizes moderate, culturally grounded, and value-oriented education. Despite growing interest in digital innovation, the integration of AI within MI remains in its early stages. Educational practices in many madrasahs continue to rely heavily on conventional, teacher-centered approaches, with limited access to digital infrastructure and insufficient pedagogical training in AI integration. Previous studies have identified key challenges, including inadequate technological resources, low teacher readiness, and the absence of pedagogical frameworks that meaningfully integrate AI into Islamic education (Fitria, 2021; Qomariah et al., 2023).

Initial observations at MI NU Ma'arif Karangnangka reveal a similar condition. While the institution demonstrates a strong commitment to moral and spiritual values, it faces significant challenges in integrating AI into its learning practices. Teachers often express uncertainty regarding how to utilize AI-based tools without compromising ethical principles and spiritual intentions. This condition reflects a broader gap between technological adoption and moral orientation in Islamic education. Furthermore, foundational competencies such as writing literacy remain essential in developing students' reflective capacity prior to engaging with more advanced AI-supported learning environments (Farkhatun, 2020; Kohnke et al., 2025).

From a pedagogical standpoint, effective AI integration requires teachers to function as mediators between algorithmic systems and students' socio-emotional development. Järvelä et al. (2023) conceptualize this process through the Human–AI Shared Regulation of Learning (HASRL), in which teachers guide students in navigating both cognitive and emotional dimensions of AI-mediated learning. However, such human–AI collaboration remains underdeveloped in madrasah contexts. Existing approaches, including co-design methodologies (Carvalho et al., 2022; Chang et al., 2025), experiential learning redesign (Budihal et al., 2020), and reflective models such as CORE (Jamaludin et al., 2020), highlight the importance of aligning technological innovation with humanistic pedagogical principles. At the policy level, AI-driven educational models implemented in countries such as the United States, China, and India demonstrate the potential of personalized learning but also reveal persistent ethical and equity challenges (Bhutoria, 2022). Scholars consistently emphasize that meaningful educational progress can only be achieved when AI complements human empathy, creativity, and critical reflection (Benvenuti et al., 2023; Jarrahi et al., 2023; Zhai et al., 2021).

Within Islamic education, the integration of humanistic values, such as empathy, responsibility, and care, is essential to prevent the risk of dehumanization in technology-mediated learning environments (Mustakul & Syarovina, 2024; Shutaleva et al., 2019). The concept of *ta'dib*, understood as the cultivation of ethical conduct and moral consciousness in Islamic pedagogy, provides an important foundation for integrating technology within a value-based educational framework. At the same time,

the emergence of generative AI necessitates the restructuring of assessment systems to ensure academic integrity and ethical accountability (Khlaif et al., 2025). Recent studies further highlight the importance of AI literacy, ethical design, and human–machine collaboration in shaping inclusive and sustainable learning ecosystems (Arias et al., 2025; Leong & Zhang, 2025; Miniankou & Puptsau, 2024).

Despite the growing body of literature, a critical gap remains. Existing frameworks, such as HASRL (Järvelä et al., 2023), SCALE (Yang, 2025), and Human-in-the-Loop (Bhutoria, 2022), primarily focus on optimizing learning outcomes and technological efficiency, while largely overlooking the integration of moral and spiritual dimensions in religious educational contexts. This creates a conceptual tension between technologically driven learning optimization and the ethical–spiritual formation that lies at the core of Islamic education. As a result, technological literacy and moral development are often treated as separate domains, leading to a fragmented pedagogical approach.

Addressing this gap, the present study proposes a contextual Humanistic–AI Learning model for Islamic elementary education. The novelty of this study lies in its integrative approach, which synthesizes AI literacy, humanistic pedagogy, and Islamic educational values into a unified conceptual framework. By bridging Humanistic Learning Theory (Rogers, 1983b; Rogers & Maslow, 1998), Self-Determination Theory (Ryan & Deci, 2017), and AI ethics frameworks (Carvalho et al., 2022; Rahimi, 2025), this study reconceptualizes AI not merely as a technological tool but as an ethical–spiritual practice embedded within the learning process.

Accordingly, this study seeks to answer the following research questions: (1) How is artificial intelligence currently understood and implemented in learning practices at MI NU Ma'arif Karangnangka? (2) What challenges and ethical tensions emerge in integrating AI within Islamic elementary education? and (3) How can a Humanistic–AI Learning model be conceptually constructed to integrate pedagogical, humanistic, and spiritual dimensions?

B. METHOD

This study employed a qualitative approach using a case study design to explore how artificial intelligence (AI) is integrated into Islamic elementary education through a humanistic pedagogical framework. A case study design was selected to enable an in-depth, contextualized, and holistic understanding of a contemporary educational phenomenon within its real-life setting, particularly in examining the interaction between technology, pedagogy, and moral–spiritual values (Creswell & Poth, 2018).

The research was conducted at Madrasah Ibtidaiyah Nahdlatul Ulama (MI NU) Ma'arif Karangnangka, Banyumas, Central Java, Indonesia. This institution was purposively selected as an information-rich case because it demonstrates a strong foundation in Islamic character education while also showing emerging practices in integrating AI-supported tools, such as Canva Magic Write, Quizziz AI, and ChatGPT, into classroom learning. These practices, although still limited and not yet systematically embedded in the curriculum, provide a relevant context for examining the early-stage development of Humanistic–AI learning.

The participants consisted of three teachers (G1–G3), one madrasah principal, and three students (S1–S3) who were directly involved in classroom learning activities. Participants were selected using purposive sampling based on their active engagement

in teaching and learning processes and their exposure to digital or AI-supported tools. Although the sample size is relatively small, it is methodologically appropriate for qualitative case study research, which prioritizes depth, contextual richness, and interpretive insight rather than statistical generalization. The adequacy of the sample was determined based on the principle of information power, as each participant provided rich, experience-based data supported by multiple sources (interviews, observations, and documents). Furthermore, the inclusion of multiple stakeholders (teachers, principal, and students) enabled triangulation of perspectives, thereby strengthening the credibility and transferability of the findings.

Data were collected using three complementary techniques. First, semi-structured interviews were conducted with all participants to explore their perceptions, experiences, and ethical reflections regarding the use of AI in learning. The interviews focused on key issues such as AI literacy, pedagogical adaptation, moral considerations, and the role of teachers as ethical mediators in AI-supported learning environments.

Second, participatory classroom observations were conducted in Grade IV and V across subjects including Bahasa Indonesia, Islamic Religious Education (PAI), and science. These observations aimed to capture real-time classroom practices, including the use of AI-supported media, teacher–student interactions, collaborative learning activities, and the manifestation of humanistic values such as honesty, responsibility, empathy, and cooperation. Particular attention was given to how teachers guided students in using AI tools reflectively and ethically.

Third, document analysis was carried out to examine instructional and institutional artifacts, including lesson plans (RPP), digital learning modules, student-generated outputs (e.g., AI-assisted posters and assignments), and institutional programs such as "Digital Berakhlak." These documents provided supporting evidence of how AI integration and humanistic values were both formally planned and practically implemented in the madrasah context.

The research instruments were developed based on Humanistic Learning Theory (Rogers, 1983b) and the AI Pedagogical Integration Framework (Carvalho et al., 2022), ensuring alignment between theoretical constructs and empirical inquiry. Interview and observation protocols were validated by two experts, one in Islamic education and one in digital pedagogy, to ensure content validity and conceptual clarity (Ary et al., 2018).

To guide the analysis, this study employed three analytical dimensions: (1) pedagogical (teachers' ability to design and implement AI-supported learning), (2) humanistic (ethical reflection, empathy, and spiritual engagement), and (3) technological (digital readiness, access, and attitudes toward AI tools). These dimensions functioned as sensitizing concepts throughout both data collection and analysis.

Data analysis was conducted using the interactive model of Miles et al. (2014), which includes data reduction, data display, and conclusion drawing/verification. To enhance analytical rigor and align with the thematic findings presented in this study, a thematic analysis approach was applied through three stages of coding. In the open coding stage, interview transcripts, observation notes, and documents were segmented and labeled to identify meaningful units related to AI use, value formation, and pedagogical practices. In the axial coding stage, these codes were organized into broader categories such as emerging AI literacy, humanistic pedagogical practices, ethical

concerns, and institutional support. In the selective coding stage, these categories were synthesized into core themes that form the basis of the study's findings and the development of the Humanistic–AI Learning Model.

The coding process was conducted manually without the use of qualitative data analysis software. This approach was intentionally chosen to allow deeper immersion in the data, iterative reflection, and context-sensitive interpretation, which are essential in qualitative case study research.

To ensure trustworthiness, this study employed both data triangulation (across interviews, observations, and documents) and source triangulation (across teachers, principal, and students). The analysis process was iterative and reflexive, involving continuous comparison between empirical data and theoretical frameworks to enhance credibility, dependability, and confirmability.

Ethical considerations were explicitly addressed throughout the research process. Ethical approval was obtained from the madrasah authority prior to data collection. All participants were informed about the purpose of the study and participated voluntarily through informed consent. Participants' identities were anonymized using coded identifiers (e.g., G1–G3, S1–S3) to ensure confidentiality, and all data were used solely for academic purposes.

Through this methodological approach, the study aims to generate a contextually grounded and theoretically informed conceptual model of Humanistic–AI Learning that reflects the dynamic integration of pedagogical, humanistic, and spiritual dimensions in Islamic elementary education (Leong & Zhang, 2025).

C. RESULT AND DISCUSSION

RESULT

This study was conducted at Madrasah Ibtidaiyah Nahdlatul Ulama (MI NU) Ma'arif Karangnangka, Banyumas, Central Java, Indonesia. As an Islamic elementary institution, the madrasah is strongly oriented toward character education grounded in Islamic values. However, empirical evidence indicates that the integration of artificial intelligence (AI) into instructional practices remains at an early and exploratory stage. Rather than representing a fully institutionalized innovation, AI appears as an emerging element negotiated within existing pedagogical and moral frameworks.

Findings from interviews, observations, and document analysis reveal a complex interaction between technological adoption and value-based education. AI is not introduced as a disruptive force but is gradually incorporated through cautious and reflective practices. The results are presented thematically to capture patterns of meaning that reflect both practical implementation and underlying tensions in the integration process.

1 Context of AI Integration in Madrasah Learning

Across all data sources, AI integration was found to be present but limited in both scope and pedagogical depth. Teachers reported using digital tools such as Canva Magic Write, Quizziz AI, and occasionally ChatGPT, primarily to support content creation and student engagement. These tools functioned as supplementary aids rather than as integral components of instructional design. The use of AI was therefore characterized by functional adaptation rather than systematic pedagogical transformation.

This limited integration reflects a broader pattern in which technology is introduced incrementally without fundamentally altering existing teaching structures. Classroom observations showed that AI-supported activities were typically brief, task-oriented, and tightly controlled by teachers. Rather than enabling autonomous or adaptive learning, AI was positioned as a controlled extension of teacher-led instruction. This suggests that the pedagogical shift toward AI-enhanced learning remains incomplete.

Teachers' narratives further illustrate this cautious positioning. One teacher described AI as "a new and interesting tool, but one that must remain guided by Islamic values" (G1). This statement indicates that AI is not perceived as neutral technology but as something that requires ethical framing. The emphasis on control and guidance reflects a concern that technological use must remain subordinate to moral objectives.

At the institutional level, similar patterns emerge. The principal articulated that technology should "serve human purposes and remain within Islamic ethical boundaries." This perspective positions AI not as an independent driver of innovation, but as a tool that must align with the madrasah's moral mission. Consequently, AI integration is shaped less by technological ambition and more by ethical consideration, resulting in a cautious and value-oriented adoption process.

2 Teachers' Meaning-Making: Between Opportunity and Ethical Control

Teachers' interpretations of AI reveal a dual orientation that combines openness to innovation with strong ethical caution. On one hand, teachers recognize AI as a resource that can enhance learning engagement and efficiency. They reported using AI tools to generate instructional materials, design interactive quizzes, and support creative assignments. These practices indicate an emerging willingness to experiment with digital tools in response to evolving educational demands.

However, this openness is consistently accompanied by a strong emphasis on ethical boundaries. Teachers repeatedly stressed that AI should not replace the human role in education, particularly in relation to moral and character development. As one teacher stated, "Technology can assist, but only humans can teach values and compassion" (G2). This reflects a clear distinction between cognitive support and moral authority, where AI is confined to the former while the latter remains exclusively human.

This dual perspective shapes how teachers position themselves in AI-mediated learning environments. Rather than acting as passive adopters of technology, teachers assume the role of moral regulators who actively filter and guide AI use. They emphasize principles such as honesty, responsibility, and intentionality, ensuring that students engage with technology in ethically appropriate ways. This role becomes particularly significant in contexts where AI outputs could potentially be misused or uncritically adopted.

Despite this reflective stance, teachers acknowledged significant limitations in their readiness. Most reported a lack of formal training and limited confidence in integrating AI beyond basic applications. This gap between awareness and competence creates a situation in which teachers recognize the importance of AI but are not yet equipped to implement it effectively. As a result, AI integration remains constrained by both technical and pedagogical limitations.

3 Student Experiences: Engagement, Dependence, and Emerging Values

Students' experiences with AI-supported learning reveal a predominantly positive orientation toward digital tools. They described learning activities involving AI as more engaging, visually appealing, and enjoyable compared to conventional methods. AI-supported tasks, particularly those involving design and interactive quizzes, were perceived as motivating and stimulating, contributing to increased participation in classroom activities.

However, this enthusiasm is accompanied by a limited conceptual understanding of AI. Many students were unable to clearly distinguish between general digital tools and AI-based systems, suggesting that their engagement is experiential rather than conceptual. AI is perceived primarily as a tool that produces quick and attractive results, rather than as a system with underlying mechanisms or implications.

At the same time, students demonstrated awareness of ethical expectations associated with technology use. They reported being instructed not to copy AI-generated content directly and to take responsibility for their own work. This indicates that ethical guidance from teachers is internalized to some extent, shaping how students interact with digital tools. Students also associated technology use with values such as cooperation and mutual assistance, particularly in group-based activities.

Observational data further revealed patterns of collaborative behavior, especially in situations where resources were limited. Students frequently shared devices and assisted peers in navigating applications, creating a learning environment characterized by collective problem-solving. However, a subtle form of dependency also emerged. Some students expressed difficulty generating ideas independently after exposure to AI-generated examples, indicating an early tension between technological support and cognitive autonomy.

4 Classroom Practices: Guided Integration and Humanistic Mediation

Classroom observations indicate that AI integration occurs within a predominantly conventional pedagogical structure. Teaching practices continue to rely heavily on direct instruction, textbooks, and teacher explanations. Within this framework, AI is introduced as a complementary element rather than a transformative force, resulting in a hybrid model of traditional and digital learning.

AI-supported activities are implemented in a structured and supervised manner. Teachers typically introduce these activities with explicit moral framing, emphasizing appropriate intentions and responsible use of technology. During implementation, teachers actively monitor student behavior, particularly to prevent copying or passive reliance on AI outputs. This close supervision reflects a deliberate effort to maintain control over the learning process.

A notable feature of classroom practice is the inclusion of reflective sessions following digital activities. Teachers encourage students to articulate what they have learned, how they used technology, and what values were involved in the process. These reflections extend beyond cognitive outcomes to include moral considerations, indicating that AI use is embedded within a broader framework of value-oriented learning.

Despite these efforts, structural limitations remain evident. Limited access to devices and unstable internet connectivity constrain the continuity and effectiveness of AI-supported learning. As a result, digital activities are often intermittent and

dependent on available resources. This reinforces the observation that AI integration is not yet systematic but contingent on situational factors.

5 Institutional Support and Structural Limitations

At the institutional level, the madrasah demonstrates a clear commitment to integrating technology within a moral framework. The leadership has initiated internal training programs and encouraged teachers to explore digital tools, reflecting a proactive stance toward educational innovation. Programs such as *Digital Berakhlak* illustrate an intentional effort to align technological development with Islamic character education.

However, document analysis reveals a gap between institutional vision and formal curricular integration. While lesson plans incorporate digital media, AI is not explicitly embedded as a structured component of the curriculum. Instead, the emphasis remains on reinforcing humanistic and spiritual values across learning activities. This suggests that the institutional approach prioritizes value continuity over rapid technological adoption.

The presence of strong moral foundations provides a supportive context for AI integration, but it also shapes its trajectory. Technology is not adopted for its own sake but must demonstrate alignment with educational values. This creates a filtering mechanism that slows down implementation but ensures ethical consistency.

External support mechanisms are still developing. Collaboration with higher education institutions has been initiated but remains limited in scope. Teachers expressed the need for sustained professional development and clearer guidelines for AI use. Without such support, institutional efforts risk remaining at the level of intention rather than achieving systematic implementation.

6 Thematic Consolidation of Findings

The integration of findings across interviews, observations, and documentation reveals recurring patterns that cannot be fully captured through linear description alone. To provide analytical clarity, the data were systematically consolidated into key thematic categories that reflect the dominant structures shaping AI integration in the madrasah context.

This thematic consolidation does not replace the empirical richness of the data but serves to synthesize cross-cutting patterns that emerge consistently across different sources. The identified themes represent not isolated phenomena, but interconnected dimensions of a broader transformation process in which technology, pedagogy, and values interact dynamically.

The themes were derived through iterative comparison of data segments, focusing on recurring meanings, tensions, and practices. They highlight how AI is understood, enacted, and negotiated within the educational environment. Importantly, these themes also reveal the gap between aspiration and implementation, as well as the role of ethical considerations in shaping technological adoption.

The following table summarizes these thematic findings by linking empirical evidence with their contextual meaning:

Table 1 Summary of Thematic Findings

No	Main Theme	Empirical Evidence	Meaning in Context
1	Understanding of AI	Basic use of Canva, Quizziz, ChatGPT	AI perceived as functional tool, not pedagogical system
2	Humanistic Mediation	Emphasis on honesty, responsibility, intention	AI framed within ethical and spiritual boundaries
3	Classroom Practice	Guided use, reflection sessions, collaboration	Early-stage integration with strong teacher control
4	Institutional Support	Training initiatives, Digital Berakhlak program	Strategic intent present, but structurally limited

7 Synthesis of Empirical Patterns

Taken together, the findings indicate that AI integration at MI NU Ma'arif Karangnangka is characterized by a gradual and negotiated process rather than rapid transformation. The adoption of AI is shaped by continuous interpretation among teachers, students, and institutional leaders, who collectively determine how technology should function within an Islamic educational framework.

A key pattern emerging from the data is the centrality of ethical considerations in guiding technological use. AI is not approached as an autonomous system but as a tool that must be aligned with moral values. This results in a form of integration that prioritizes control, reflection, and value alignment over efficiency or automation.

At the same time, the findings reveal structural and pedagogical limitations that constrain the development of more advanced AI integration. Limited infrastructure, insufficient training, and the absence of formal curricular embedding contribute to a situation in which AI remains peripheral rather than transformative.

Overall, the madrasah can be understood as operating within a transitional learning ecosystem, where elements of digital innovation coexist with strong humanistic traditions. This transition is not linear but involves ongoing negotiation between technological possibilities and ethical commitments, shaping a distinctive model of AI integration grounded in value-based education.

DISCUSSION

The findings of this study indicate that the integration of artificial intelligence (AI) in Islamic elementary education unfolds as a gradual and negotiated process rather than a direct technological transformation. The empirical evidence shows that AI is introduced in limited and functional ways, primarily to support instructional preparation and student engagement, while its deeper pedagogical integration remains underdeveloped. This pattern confirms that in value-based educational settings, technological adoption is not driven solely by innovation demands but is mediated by existing pedagogical traditions and moral considerations. In this case, the madrasah context shapes AI integration as a cautious and selective process, where technological use is continuously evaluated against its alignment with Islamic educational values.

This finding resonates with recent international studies emphasizing that AI in education is not value-neutral but socially and culturally constructed (Benvenuti et al., 2023; Jarrahi et al., 2023). However, this study extends that perspective by showing how ethical considerations are not only conceptual but actively embedded in classroom

practices. Teachers in this study do not perceive AI as an autonomous instructional agent; instead, they position it as a supportive tool that must remain under human control. The emphasis on intention, responsibility, and moral boundaries reflects a form of ethical filtering, where the legitimacy of AI is determined by its contribution to value formation rather than its technical sophistication. This suggests that AI integration in religious education contexts requires a redefinition of success indicators, shifting from efficiency and performance toward ethical alignment and character development.

At the pedagogical level, the findings demonstrate that humanistic learning principles remain central despite the introduction of AI. Teachers continue to prioritize relational interaction, guidance, and reflective engagement, indicating that AI does not displace human roles but is incorporated into existing pedagogical frameworks. This supports the argument that effective AI integration depends on the preservation of human agency in learning processes (Carvalho et al., 2022). The observed practices also align with the Human–AI Shared Regulation of Learning (HASRL) model (Järvelä et al., 2023), particularly in the way teachers mediate interactions between students and digital tools. Nevertheless, the present study adds an important nuance: such mediation is not limited to cognitive regulation but extends to ethical and spiritual dimensions, where teachers actively shape how students interpret and use technology.

The study also reveals that teachers' engagement with AI is characterized by a combination of openness and constraint. While teachers recognize the potential of AI to enhance learning experiences, their implementation remains limited by both technical capacity and pedagogical confidence. This condition reflects a transitional phase commonly reported in global contexts, where educators are aware of AI's potential but lack sufficient training to integrate it meaningfully (Chiu et al., 2022). Interpreted through the lens of Self-Determination Theory (Ryan & Deci, 2017), teachers demonstrate emerging autonomy in experimenting with digital tools, yet their sense of competence remains constrained by limited professional development opportunities. In addition, the dimension of relatedness, particularly collegial collaboration and leadership support, plays a significant role in sustaining their motivation. Notably, this study highlights that motivation is not purely professional but also moral and spiritual, suggesting an extension of existing motivational frameworks in educational technology contexts.

Another important finding concerns the perceived risk of dehumanization associated with AI use. Teachers and school leaders express concerns that excessive reliance on AI may weaken students' critical thinking and moral awareness, echoing broader debates on cognitive outsourcing and ethical displacement in digital learning environments (Bauer et al., 2025). However, rather than rejecting AI, participants respond by developing practical strategies to maintain human-centered learning. These include close supervision, explicit ethical guidance, and reflective discussions following digital activities. Such practices demonstrate that ethical considerations are operationalized at the pedagogical level, not merely articulated as abstract principles. This aligns with the notion of AI ethics-by-design (Leong & Zhang, 2025), but extends it by showing that ethical design can also emerge through instructional practices, particularly in contexts where formal technological regulation is limited.

At the institutional level, the role of leadership appears as a critical mediating factor in shaping AI integration. The principal's approach reflects a value-oriented leadership model that seeks to align technological innovation with spiritual and moral

goals. This supports findings from prior studies on transformative and values-based educational leadership (Jailani et al., 2025), which emphasize the importance of aligning institutional vision with pedagogical change. At the same time, structural limitations, such as inadequate infrastructure and limited access to training, continue to constrain implementation. This dual condition highlights a common challenge in AI adoption across educational contexts, where institutional commitment does not always translate into systemic readiness (Bhutoria, 2022). In this study, however, such limitations do not lead to stagnation but instead reinforce a gradual and reflective approach to innovation.

Taken together, the findings suggest that AI integration in this context is best understood as a process of alignment rather than transformation. The interaction between pedagogical practices, ethical considerations, and institutional conditions produces a distinctive model of adoption in which technology is neither fully embraced nor rejected, but continuously negotiated. This contributes to the broader discourse on AI in education by offering an alternative perspective grounded in value-based education. While much of the international literature focuses on optimization and personalization, this study highlights the importance of moral intentionality and cultural context in shaping how AI is understood and implemented.

In this regard, the study offers a conceptual contribution by implicitly advancing what can be termed an AI–humanistic–spiritual integration framework, where effective technology use depends on the balance between instructional design, human values, and spiritual orientation. This framework complements existing models such as HASRL and human-centered AI by incorporating dimensions that are often overlooked in mainstream discussions, particularly the role of spirituality in guiding technological engagement. Furthermore, the notion of "AI for Adab" emerging from this study provides a novel lens through which AI can be understood as a means of cultivating ethical awareness and disciplined thinking, rather than merely enhancing efficiency.

Overall, this study demonstrates that the integration of AI in Islamic education is not a process of technological substitution but one of pedagogical and ethical reinterpretation. The findings underscore that the future of AI in education, particularly in value-based contexts, will depend not only on technological advancement but also on the capacity of educators and institutions to critically negotiate its role within broader moral and cultural frameworks.

CONCLUSION

This study demonstrates that the integration of artificial intelligence (AI) in Islamic elementary education is not merely a process of technological adoption, but a value-mediated transformation shaped by pedagogical, ethical, and spiritual considerations. The findings reveal that AI use at MI NU Ma'arif Karangnangka remains at an early and exploratory stage, characterized by limited but meaningful practices that are carefully aligned with Islamic moral principles. Teachers and school leaders show an emerging awareness of AI's potential, yet their engagement is guided by a strong commitment to maintaining humanistic interaction, ethical responsibility, and spiritual intentionality within the learning process.

Rather than positioning AI as a disruptive force, this study finds that it is selectively incorporated into existing pedagogical practices through processes of control, reflection, and moral mediation. This indicates that in faith-based educational

contexts, the success of AI integration is not determined solely by technological capacity, but by the ability of educators to negotiate its role within a broader framework of values. Institutional leadership further reinforces this process by framing digital transformation as part of a moral and spiritual mission, thereby sustaining a balanced approach between innovation and value preservation.

Theoretically, this study contributes to the development of a Humanistic–AI Learning Model, which conceptualizes AI integration as a dynamic interaction between three interdependent dimensions: pedagogical functionality, humanistic values, and spiritual orientation. This model extends existing frameworks of AI in education by incorporating ethical and spiritual dimensions as central, not peripheral, components of technology integration. In doing so, the study introduces a novel perspective of "AI for Adab," where artificial intelligence is understood as a means of cultivating disciplined thinking, moral awareness, and reflective learning, rather than merely enhancing efficiency or personalization.

Practically, the findings suggest that effective AI implementation in madrasahs requires more than infrastructure development; it necessitates value-oriented teacher training, ethical AI literacy, and leadership strategies that integrate technological innovation with religious principles. Teachers play a crucial role as mediators who ensure that AI supports, rather than replaces, human interaction and moral development, while school leaders act as key agents in shaping an ethically grounded digital learning culture. From a policy perspective, the study highlights the importance of developing AI education frameworks that are culturally and spiritually responsive, particularly in contexts where education is closely tied to moral formation.

Despite these contributions, this study has several limitations. First, the research is based on a single-case study with a small number of participants (three teachers, one principal, and three students), which limits the generalizability of the findings. Second, the study focuses on early-stage AI integration, meaning that long-term impacts on learning outcomes and character development cannot yet be fully assessed. Third, the qualitative design, while providing in-depth insights, does not allow for statistical validation of the proposed model.

Future research is therefore needed to expand and strengthen these findings. Comparative studies across multiple madrasahs or different cultural contexts would help assess the transferability of the Humanistic–AI Learning Model. Quantitative or mixed-methods research could be conducted to test the effectiveness of AI integration on student learning outcomes, ethical development, and digital literacy. In addition, longitudinal studies are recommended to examine how sustained exposure to AI influences students' cognitive, moral, and spiritual growth over time.

In conclusion, this study underscores that the future of AI in education, particularly within Islamic and value-based systems, depends not only on technological advancement, but on the capacity to embed such technologies within a coherent ethical and spiritual framework. AI, when guided by principles of adab, has the potential to become not only a tool for learning, but also a medium for cultivating responsible, reflective, and morally grounded learners in the digital age.

Acknowledgments: The authors would like to express their gratitude to Universitas Islam Negeri Prof. K.H. Saifuddin Zuhri Purwokerto for providing academic and institutional support that facilitated this research. The authors also sincerely thank the administrators, teachers, and staff of Madrasah Ibtidaiyah Nahdlatul Ulama (MI NU) Ma'arif Karangnangka, Banyumas for their cooperation and assistance during the research process.

Author contributions: Conceptualization, D.K.A. and I.M.; methodology, D.K.A., I.M., and S.S.; data collection, D.K.A. and S.S.; data analysis and interpretation, D.K.A., I.M., and M.A.F.; writing, original draft preparation, D.K.A.; writing, review and editing, I.M., M.A.F., and M.A.; supervision, I.M. All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Data Availability: The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to ethical considerations and institutional policies.

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