

Artificial and Spiritual Intelligence Synergy in Madrasah Digital Transformation

Iwan Hermawan¹, Oyoh Bariah², Nur Aini Farida³
^{1,2,3} Universitas Singaperbangsa Karawang, Indonesia

ARTICLE INFO	ABSTRACT
Article History: Received: March 31, 2026 Revised: June 24, 2026 Accepted: June 27, 2026 Keywords: artificial intelligence; spiritual intelligence; madrasah; civilized AI; society 5.0; digital transformation.	This study examines the synergy between artificial intelligence (AI) and spiritual intelligence (SI) in the digital transformation of State Islamic Senior High Schools (MAN) in Karawang Regency in the Society 5.0 era. Specifically, it aims to: (1) identify AI utilization in pedagogical and administrative practices; (2) analyze its impacts, supporting factors, and barriers; and (3) formulate an empirical model of AI-SI synergy for value-based madrasah transformation. This study employed an explanatory sequential mixed-methods design involving 235 respondents: principals, teachers, administrative staff, students, and community/religious leaders. Data were collected through online questionnaires, semi-structured interviews, documentation analysis, and direct observation. Quantitative data were analyzed descriptively, while qualitative data were interpreted through condensation, display, and verification. The findings reveal that AI is used for learning material development, interactive assessment, attendance automation, grade processing, and digital archiving. AI improves learning effectiveness and administrative efficiency, supported by institutional policy and innovation motivation, yet constrained by unstable internet access and limited technical training. More importantly, AI-SI synergy emerges when AI serves as a cognitive-administrative assistant, while teachers remain muaddib through five Islamic value pillars: <i>amanah</i>, <i>ikhlas</i>, responsibility, <i>adab</i>, and <i>tawakal</i>. The study concludes that Civilized AI provides an ethical framework for madrasah digital transformation.
Corresponding Author: Iwan Hermawan Email: iwan.hermawan@staff.unsika.ac.id	
How to Cite: Hermawan, Iwan, Oyoh Bariah, & Nur Aini Farida. "Artificial and Spiritual Intelligence Synergy in Madrasah Digital Transformation" <i>Cendekia: Jurnal Kependidikan dan Kemasyarakatan</i> 24, No. 1 (2026): 147-164. https://doi.org/10.21154/cendekia.v24i1.13463	

INTRODUCTION

Rapid advancements in information technology, particularly artificial intelligence (AI), have transformed various aspects of education, including Islamic educational institutions. In the Society 5.0 era, the boundaries between cyberspace and physical space are increasingly blurred, making technology not merely a passive tool but an integral part of learning management, administrative services, and data-driven decision-making. AI offers significant opportunities to improve educational efficiency through administrative automation, adaptive learning, digital assessment, and student data analysis.¹ For madrasahs, especially State Islamic Senior High Schools (MAN), technological adaptation is not only an institutional necessity but also part of the broader mission of Islamic education: to prepare students who are religiously grounded, morally resilient, intellectually adaptive, and globally competitive.²

In the context of Islamic education, digital transformation should not be understood merely as technological adoption, but as an institutional process that requires teacher professionalism, ethical leadership, and spiritual orientation. Previous studies in Cendekia show that Islamic Religious Education teachers in the Society 5.0 era need continuous professional development, training, and a service-based work ethic to respond to contemporary educational change.³ This confirms that integrating AI into madrasahs must be accompanied by strengthening teachers' pedagogical, professional, and ethical capacities.

However, the adoption of AI in Islamic education also raises ethical, pedagogical, and spiritual concerns. While Islam is open to technological innovation when it serves public benefit, excessive dependence on algorithms may lead to dehumanization, privacy risks, weakened academic integrity, reduced independent thinking, and the erosion of moral sensitivity.⁴ These risks are particularly important for madrasahs because Islamic education is not limited to knowledge transmission, but also involves the cultivation of adab, morality,

¹ Rachel Theresa Laras Pratiwi and Mahmuddin Yunus, "Manfaat Dan Tantangan Penggunaan Artificial Intelligence (AI) Bagi Guru Dan Peserta Didik Di Era Society 5.0," *Journal of Innovation and Teacher Professionalism* 3, no. 2 (November 13, 2024): 488–94, <https://doi.org/10.17977/um084v3i22025p488-494>; Miftahul Huda et al., "Peran Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam," *REFERENSI ISLAMIKA: Jurnal Studi Islam* 2, no. 2 (August 27, 2024): 53–61, <https://doi.org/10.61220/ri.v2i2.005>; Agus Wedi, Dina Mardiana, and Umiarso Umiarso, "Digital Transformation Model of Islamic Religious Education in the AI Era: A Case Study of Madrasah Aliyah in East Java, Indonesia," *International Journal of Learning, Teaching and Educational Research* 24, no. 8 (August 2025): 842–63, <https://doi.org/10.26803/ijlter.24.8.37>.

² Baharuddin Baharuddin et al., "Pendidikan Islam Dalam Era Kecerdasan Buatan: Membangun Peradaban Berbasis Etika Dan Teknologi Di Indonesia," *JIIP - Jurnal Ilmiah Ilmu Pendidikan* 8, no. 4 (April 4, 2025): 3782–91, <https://doi.org/10.54371/jiip.v8i4.7432>; Ismail Ismail, Muhammad Abrar Parinduri, and Florante P. Ibarra, "Strengthening The Ideology of Islamic Religious Education in The Era of Technological Disruption," *Jurnal Ilmiah Ilmu Terapan Universitas Jambi* 9, no. 2 (April 2025): 465–73, <https://doi.org/10.22437/jiutuj.v9i2.41841>.

³ Nurdianto Nurdianto et al., "Issues of Professionalism and Competency of Islamic Religious Education Teachers in Facing the Society 5.0 Era," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 22, no. 1 (July 1, 2024), <https://doi.org/10.21154/cendekia.v22i1.8782>.

⁴ Fajar Maulidi, "Pemanfaatan Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam: Peluang Dan Tantangan Di Era Disrupsi Teknologi," *Education Achievement: Journal of Science and Research*, August 1, 2025, 722–30, <https://doi.org/10.51178/jsr.v6i2.2791>; Huda et al., "Peran Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam"; Musa Adekunle Ayanwale et al., "Teachers' Readiness and Intention to Teach Artificial Intelligence in Schools," *Computers and Education: Artificial Intelligence* 3 (January 2022): 100099, <https://doi.org/10.1016/J.CAEAI.2022.100099>.

spirituality, and religious responsibility. Therefore, AI integration in madrasahs should be understood not only as technological modernization but also as a value-based transformation that requires spiritual guidance.

This is where the synergy between artificial intelligence and spiritual intelligence becomes urgent. AI may support cognitive and administrative tasks, but spiritual intelligence, mediated through educators, is needed to safeguard the affective, moral, and ethical dimensions of education. In this framework, teachers remain central as value guardians, moral guides, and character builders, while AI functions as a technological assistant that supports learning effectiveness and institutional efficiency. Such a balance is essential to ensure that digital transformation strengthens, rather than weakens, madrasahs' Islamic identity.

Previous studies have examined various aspects of AI integration in Islamic education. Pratama and Muhammad⁵ and Achruh et al.⁶ highlight the opportunities and challenges of AI adoption, particularly in relation to infrastructure and human resource readiness. Nirwana AN et al.⁷ analyze the cognitive, affective, and psychomotor impacts of AI integration, while Sari, Amin, and Isnanimataka⁸ emphasize the ethical imperative of AI use to prevent distortion and misinterpretation of religious values. These studies show that AI integration requires a strong ethical foundation; however, most of them remain conceptual, theoretical, or focused on general impacts.

There is still limited empirical research that comprehensively examines how the synergy between AI and spiritual intelligence is implemented in the madrasah ecosystem from multiple perspectives, including school leaders, teachers, administrative staff, students, and community or religious leaders. More specifically, concrete data on this phenomenon in MAN schools throughout Karawang Regency remain limited. This gap provides the basis for the novelty of the present study, which does not merely examine technological efficiency but also formulates an empirical framework for “Civilized AI,” in which AI supports cognitive and administrative functions while spiritual authority and character formation remain under the guidance of educators.

Given this urgency and the existing research gap, this study is directed toward three specific objectives: (1) to identify the forms of AI utilization in pedagogical and

⁵ Arizqi Ihsan Pratama and Muhd Rosydi Muhammad, “Artificial Intelligence in Islamic Education: Opportunities and Challenges in the Digital Era,” *Madania: Jurnal Kajian Keislaman* 29, no. 1 (July 14, 2025): 133, <https://doi.org/10.29300/madania.v29i1.7766>.

⁶ Achruh Achruh et al., “Challenges and Opportunities of Artificial Intelligence Adoption in Islamic Education in Indonesian Higher Education Institutions,” *International Journal of Learning, Teaching and Educational Research* 23, no. 11 (November 2024): 423–43, <https://doi.org/10.26803/ijlter.23.11.22>.

⁷ Andri Nirwana AN et al., “SWOT Analysis of AI Integration in Islamic Education: Cognitive, Affective, and Psychomotor Impacts,” *Qubahan Academic Journal* 5, no. 1 (March 2025): 476–503, <https://doi.org/10.48161/qaj.v5n1a1498>.

⁸ Ana Kurnia Sari, Khoirul Amin, and Mustiza Isnanimataka, “Etika Artificial Intelligence (AI) Dalam Pendidikan Islam: Mengatasi Tantangan Distorsi Dan Misinterpretasi,” in *IC-TiaRS (International Conference on Tradition and Religious Studies)* (Palembang: Fakultas Ushuluddin dan Pemikiran Islam UIN Raden Fatah Palembang, 2024).

administrative practices at MAN schools throughout Karawang Regency; (2) to analyze the supporting and inhibiting factors that influence AI implementation in the madrasah ecosystem; and (3) to formulate an empirical framework for the synergy between artificial intelligence and spiritual intelligence as the foundation of value-based digital transformation in madrasahs. These three objectives serve as the main structure for presenting and discussing the findings of this study.

RESEARCH METHOD

This study employed a mixed-methods approach with an explanatory sequential design, in which quantitative data were collected and analyzed first, followed by qualitative data to explain, deepen, and contextualize the quantitative findings. This design was selected because the study not only aimed to measure the forms, impacts, supporting factors, and inhibiting factors of artificial intelligence (AI) utilization, but also to interpret how AI is synergized with spiritual intelligence (SI) within the madrasah ecosystem. The study was conducted across all State Islamic Senior High Schools (MAN) in Karawang Regency, comprising four institutions. The student population in this study comprised all MAN students in Karawang Regency in 2025, totaling 1,960 students, according to EMIS data from the Ministry of Religious Affairs. In addition to students, the research also involved madrasah stakeholders, including principals, teachers, administrative staff, and community or religious leaders.

The sample consisted of 235 respondents representing various elements of the madrasah education ecosystem. The sampling technique combined stratified random sampling and purposive sampling. Stratified random sampling was used to select student respondents in order to ensure proportional representation across grade levels and madrasahs. Meanwhile, purposive sampling was used to select principals, teachers, administrative staff, and community or religious leaders because they were directly involved in policy formulation, instructional practices, digital administration, and value-based educational supervision in madrasahs.

Data collection techniques in this study consisted of questionnaires, interviews, observation, and documentation. A questionnaire was used to collect quantitative data on the intensity and forms of AI use, perceived impacts, supporting factors, and inhibiting factors. The interview technique was used to collect qualitative data concerning participants' experiences, ethical considerations, spiritual perspectives, and perceptions of the synergy between AI and SI. Observation was conducted to obtain direct data on the actual implementation of AI in learning activities and administrative services. Documentation was used to collect institutional data, including madrasah work plans, digitalization policy documents, learning documents, administrative records, and other relevant institutional documents.

The instruments used in this study were adjusted to each data collection technique. The questionnaire instrument was developed as an online survey using a Likert scale and multiple-response items. The interview instrument consisted of semi-structured interview

guidelines designed to explore the experiences and views of principals, teachers, administrative staff, students, and community or religious leaders. The observation instrument consisted of an observation checklist and field notes focusing on AI-based learning practices, administrative automation, and the interaction between technology use and Islamic values in madrasahs. The documentation instrument consisted of a document review sheet used to identify institutional policies, digital transformation programs, and supporting evidence related to AI implementation.

Quantitative data obtained from the questionnaires were analyzed using descriptive statistics. The analysis was presented in the form of frequencies and percentages to describe the forms of AI utilization, the perceived impact of AI on learning and administration, and the supporting and inhibiting factors influencing AI implementation in MAN schools throughout Karawang Regency. The quantitative analysis was used as the initial basis for mapping the general pattern of AI adoption in madrasahs.

Qualitative data obtained from interviews, observations, and documentation were analyzed using the interactive model developed by Miles, Huberman, and Saldaña,⁹ which includes data condensation, data display, and conclusion drawing or verification. Data condensation involved selecting, simplifying, and organizing relevant data to align with the study's focus. Data display was conducted by organizing qualitative findings into thematic categories: pedagogical use of AI, administrative automation, ethical concerns, spiritual guidance, and the role of teachers as value guardians. Conclusion drawing and verification were then conducted to formulate the empirical framework of AI–SI synergy, later conceptualized as “Civilized AI.” The validity of the qualitative data was strengthened through source and technique triangulation and extended observation.

RESULT AND DISCUSSION

Forms of AI Utilization in Pedagogical and Administrative Practices

The first objective of this study was to identify the forms of artificial intelligence (AI) utilization in pedagogical and administrative practices at State Islamic Senior High Schools (MAN) throughout Karawang Regency. The findings indicate that AI has been adopted in two main domains: learning practices and administrative management. In the pedagogical domain, teachers use generative AI applications such as ChatGPT, Gemini, Canva Magic Design, and digital assessment platforms to design teaching materials, prepare lesson plans, develop learning modules, summarize learning content, and create interactive assessment instruments. These practices demonstrate that AI functions as a pedagogical assistant, supporting teachers in planning, implementing, and evaluating learning activities. This finding is consistent with previous studies that emphasize that AI can improve instructional efficiency but cannot replace the humanistic, ethical, and emotional roles of teachers in education.¹⁰

⁹ Matthew B Miles, A Michael Huberman, and Johnny Saldaña, “Qualitative Data Analysis : A Methods Sourcebook,” Third edit (Thousand Oaks, California: SAGE Publications, Inc., 2014).

¹⁰ Janes Kurnia Hadi et al., “Kolaborasi Manusia-Mesin Dalam Pendidikan: Strategi Guru Beradaptasi

The pedagogical use of AI in madrasahs can also be understood within the broader development of digital learning media that encourages student engagement. Aisyah et al.¹¹ found that gamification-based digital learning positively influences students' intrinsic motivation, increases participation in discussions and questioning activities, strengthens teacher-student interaction, and promotes collaboration among students. This finding supports the argument that digital technology in madrasah learning becomes educationally meaningful when it is not used merely to deliver information, but to create interactive, participatory, and teacher-guided learning experiences.

The interview data confirm this pattern. One Islamic Education teacher stated, "AI should be an educational partner, not a replacement for teachers, because humans must still guide values, character, and ethics."¹² This statement shows that teachers accept AI as a technological assistant, but not as an autonomous educational authority. AI is useful for accelerating technical tasks, yet interpretation, ethical guidance, value internalization, and character formation remain within educators' authority. Therefore, AI utilization in madrasahs is not merely a matter of technological adaptation, but also a process of redefining the teacher's role as a moral and spiritual guide in digital learning.

Students also perceive AI as a tool that helps them understand learning materials more quickly. Several students reported that AI applications such as ChatGPT, Google Assistant, and Cici make learning more interactive and help them discover information they did not previously know. One student stated, "AI helps me learn quickly, but I still have to ask my teacher which answer is correct according to our religion."¹³ This response indicates that students benefit from AI, but they still recognize the need for teacher validation, especially in matters related to religious understanding and ethics. In this regard, AI encourages access to information, while teachers remain essential for ensuring the accuracy, appropriateness, and moral orientation of learning. This finding supports studies showing that AI can accelerate students' learning, but critical validation is still needed to prevent passive reliance on machine-generated answers.¹⁴

Dengan Teknologi AI," *RIGGS: Journal of Artificial Intelligence and Digital Business* 4, no. 2 (July 19, 2025): 6329–33, <https://doi.org/10.31004/riggs.v4i2.1583>; Esti Nur Wakhidah et al., "Peran Artificial Intelligence Dalam Transformasi Sumber Daya Manusia Pendidikan: Peningkatan Kualitas Vs Penggantian," *Journal Development* 12, no. 1 (June 28, 2024): 10–23, <https://doi.org/10.53978/jd.v12i1.383>; Ali Masrur, "Relasi Iman Dan Ilmu Pengetahuan Dalam Perspektif Al-Quran (Sebuah Kajian Tafsir Maudhui)," *Al-Bayan: Jurnal Studi Ilmu Al-Qur'an Dan Tafsir* 1, no. 1 (June 28, 2016): 35–52, <https://doi.org/10.15575/al-bayan.v1i1.1672>; Isni Dwi Rahma et al., "Transformasi Peran Guru Di Era Kecerdasan Buatan: Dari Pengajar Menjadi Fasilitator Digital," *RIGGS: Journal of Artificial Intelligence and Digital Business* 4, no. 2 (July 18, 2025): 6198–6203, <https://doi.org/10.31004/riggs.v4i2.1566>.

¹¹ Nur Aisyah et al., "Enhancing Student Participation through Gamification-Based Digital Learning Media: A Study of Structural Gamification," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 23, no. 2 (December 3, 2025): 303–23, <https://doi.org/10.21154/cendekia.v23i2.11640>.

¹² Interview with Islamic Education teacher, MAN Karawang, May 2025.

¹³ Interview with student, MAN Karawang, May 2025.

¹⁴ Ade Zulkarnain Hasibuan et al., "Transformasi Cara Belajar Siswa Dengan Teknologi AI Di Genggaman Menggunakan ChatGPT," *Jurnal Hasil Pengabdian Masyarakat (JURIBMAS)* 3, no. 3 (March 30, 2025): 188–94, <https://doi.org/10.62712/juribmas.v3i3.336>; Gisca Dea Sukma et al., "Pemahaman Pelajar Tentang Kecerdasan Buatan Dan Implikasinya Terhadap Literasi," *JURNAL JENDELA PENDIDIKAN* 5,

In the administrative domain, AI supports face-based attendance systems, automated grade recaps, digital archiving, academic reporting, and data-driven decision-making. These practices indicate that AI enhances institutional efficiency by simplifying repetitive administrative tasks and accelerating data processing. A staff member emphasized, “AI-based data management must be grounded in the values of trust and integrity, so that madrasahs remain clean and trustworthy institutions.”¹⁵ This interview excerpt shows that administrative use of AI is not only understood as technical automation, but also as a matter of data ethics, institutional accountability, and amanah. Previous studies also confirm that AI-based management systems can improve educational administration when supported by adequate infrastructure, institutional policy, and human resource readiness.¹⁶

The quantitative data further clarify the practical significance of AI adoption in MAN schools throughout Karawang Regency. The most visible impact is improvement in learning effectiveness, which accounts for 28% of respondents’ responses, followed by administrative efficiency at 25%. These percentages indicate that AI is perceived not merely as a technological trend, but as a functional instrument that directly affects two core areas of madrasah governance: instructional quality and institutional service delivery. In the pedagogical domain, the 28% impact on learning effectiveness reflects teachers’ experience in using AI to accelerate lesson preparation, diversify learning resources, and design interactive assessments. In the administrative domain, the 25% efficiency impact indicates that AI helps reduce repetitive workloads, accelerate data processing, and enable more responsive academic services.

This distribution is consistent with international findings on AI in education. Crompton and Burke’s systematic review shows that AI in educational institutions is commonly used for assessment and evaluation, AI assistance, prediction, intelligent tutoring, and managing student learning.¹⁷ Similarly, Zawacki-Richter et al. identify AI applications in academic support, institutional services, assessment, adaptive systems, and intelligent tutoring.¹⁸ The present study confirms these global patterns in the specific context of Islamic

no. 02 (May 10, 2025): 212–23, <https://doi.org/10.57008/jjp.v5i02.1293>; Muhammad Yoggi Aqsal Darmawan Darmawan, Purnomo Purnomo, and Sabarudin Sabarudin, “Pemanfaatan Akal Imitasi (AI) Sebagai Media Pembelajaran Dalam Pembentukan Literasi Kritis Dan Etika Digital Islami Mahasiswa Pendidikan Agama Islam UIN Salatiga,” *Action Research Journal Indonesia (ARJI)* 7, no. 4 (November 27, 2025), <https://doi.org/10.61227/arji.v7i4.623>.

¹⁵ Interview with administrative staff, MAN Karawang, May 2025.

¹⁶ Rahmadanni Pohan and Nurmaliana Pohan, “Integrasi Artificial Intelligence Dalam Sistem Manajemen Pendidikan Islam Untuk Meningkatkan Efisiensi Administrasi,” *Sistem Pendukung Keputusan Dengan Aplikasi* 4, no. 2 (September 30, 2025): 101–10, <https://doi.org/10.55537/spk.v4i2.1305>; Firmansah Kobandaha et al., “Manajemen Pendidikan Islam Berbasis Artificial Intelligences Di Era Digital Sebuah Tinjauan Literatur,” *RIGGS: Journal of Artificial Intelligence and Digital Business* 4, no. 1 (April 30, 2025): 576–82, <https://doi.org/10.31004/riggs.v4i1.822>.

¹⁷ Helen Crompton and Diane Burke, “Artificial Intelligence in Higher Education: The State of the Field,” *International Journal of Educational Technology in Higher Education* 20, no. 1 (April 24, 2023): 22, <https://doi.org/10.1186/s41239-023-00392-8>.

¹⁸ Olaf Zawacki-Richter et al., “Systematic Review of Research on Artificial Intelligence Applications in Higher Education – Where Are the Educators?,” *International Journal of Educational Technology in Higher Education* 16, no. 1 (December 28, 2019): 39, <https://doi.org/10.1186/s41239-019-0171-0>.

senior high schools. However, the contribution of this study lies in showing that AI adoption in madrasahs cannot be assessed only through efficiency indicators. Quantitative gains in learning and administration become educationally meaningful only when they are connected to spiritual intelligence, teacher authority, and Islamic ethical values.

As shown in Figure 1, AI implementation in madrasahs is organized into two interconnected domains: pedagogical practices and administrative services. In the pedagogical domain, AI is used to support the development of teaching materials, learning modules, and automated evaluation instruments. In the administrative domain, AI is utilized for face-based attendance, automatic grade summaries, digital archiving, and academic reports. The figure also indicates that digitalization in madrasahs is not value-free. AI must remain grounded in Islamic values so that technological efficiency does not weaken the moral, spiritual, and humanistic dimensions of Islamic education.

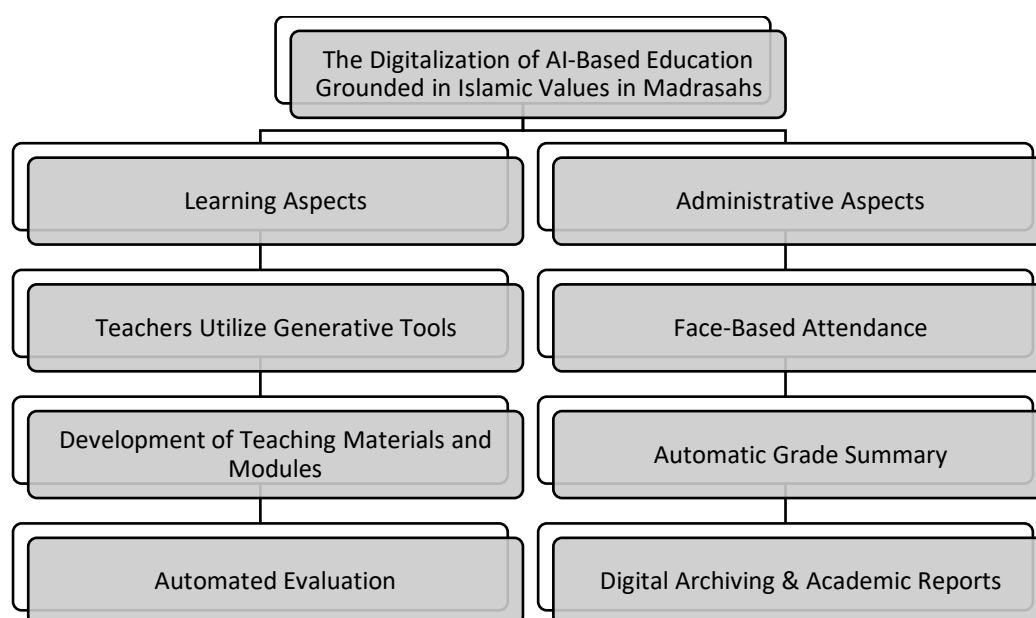


Figure 1. The Digitalization of AI-Based Education Grounded in Islamic Values in Madrasahs

Overall, the forms of AI use identified in this study indicate that MAN schools in Karawang Regency are entering a transitional phase of digital transformation. Some teachers and staff have integrated AI into daily pedagogical and administrative activities, while others still use it occasionally or depend on more digitally literate colleagues. This condition indicates that AI adoption in madrasahs is growing. However, it still requires systematic training, ethical guidelines, and institutional support to ensure that technology serves educational values rather than replacing them.

Supporting and Inhibiting Factors in AI Implementation

The second objective of this study was to analyze the supporting and inhibiting factors that influence AI implementation in the madrasah ecosystem. The findings indicate that AI implementation is supported by internal madrasah policies, leadership encouragement, and

teachers' and students' motivation to innovate. Quantitatively, internal policy support and innovation motivation emerged as important enabling factors in AI adoption. Qualitatively, this support is reflected in the inclusion of digitalization themes in madrasah work plans and in school leaders' encouragement to use technology to improve learning quality and institutional services.

A madrasah principal emphasized, "Technology can help teachers and students, but its direction and purpose must remain grounded in Islamic values. AI must not cause us to forget proper conduct and moral values."¹⁹ This statement shows that leadership support is not only administrative, but also normative. Madrasah leaders encourage digital innovation while simultaneously setting ethical boundaries for technology use. This finding confirms that leadership plays a strategic role in building a digital culture that remains aligned with Islamic identity. Technology is therefore positioned as a means, not an end, and its use must be guided by adab, sincerity, responsibility, and Islamic moral values.²⁰

This finding is reinforced by Humaisi et al.²¹, who argue that pesantren-based transformational leadership plays a strategic role in developing madrasah innovation. Their study shows that idealism, inspirational motivation, intellectual stimulation, and individual awareness among madrasah leadership can strengthen stakeholder commitment, support digital-based infrastructure, encourage innovative training, and develop human resources aligned with global competency demands. Therefore, leadership support in AI implementation should not be understood merely as formal policy approval, but as a transformative force that shapes digital culture, institutional readiness, and value-based innovation in madrasahs.

Teacher and student motivation also serves as an important enabling factor. Teachers use AI because it helps them prepare teaching materials more efficiently, design assessment instruments, and provide more varied learning experiences. Students use AI because it makes information more accessible and helps them understand difficult concepts more quickly. These findings show that AI adoption is driven not only by institutional policy but also by practical needs in learning and administration. In this regard, AI is accepted because it provides direct benefits for educational actors.

The quantitative data show that internal policy support accounts for 24% of the

¹⁹ Interview with madrasah principal, MAN Karawang, May 2025.

²⁰ Syukron Jamal, Elan Zaelani Rahman, and Hasanudin Hasanudin, "Integrasi Nilai Akhlak, Adab, Dan Maqasid Syari'ah Dalam Pemanfaatan Teknologi Pendidikan," *Ta'dibiya* 5, no. 2 (October 1, 2025): 58–70, <https://doi.org/10.61624/japi.v5i2.235>; Afifah Ramadhanisa et al., "Pemikiran Pendidikan Islam Tentang Adab Guru Dan Murid Sebagai Fondasi Etika Pembelajaran Di Era Artificial Intelligence (AI)," *QAZI: Journal of Islamic Studies* 2, no. 2 (December 2, 2025): 568–82, <https://doi.org/10.61104/qz.v2i2.450>; Rahma Alisa Septiana, Imam Sopingi, and Athi' Hidayati, "Adab Penggunaan Artificial Intelligence (AI) Dalam Keilmuan: Tinjauan Kitab Adabul Alim Wal Muta'allim," *Revorma: Jurnal Pendidikan Dan Pemikiran* 5, no. 1 (May 5, 2025): 71–82, <https://doi.org/10.62825/revorma.v5i1.134>; Ainul Fitriyah et al., "AI Dalam Kelas PAI SD: Tantangan Humanisme Dan Akhlak Guru," *Jurnal Pendidikan: Riset Dan Konseptual* 10, no. 1 (January 1, 2026): 133–41, https://doi.org/10.28926/riset_konseptual.v10i1.1430.

²¹ M. Syafiq Humaisi et al., "Pesantren-Based Transformational Leadership in the Development of International Madrasah Innovation," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 22, no. 1 (July 1, 2024), <https://doi.org/10.21154/cendekia.v22i1.8781>.

enabling factors, while teachers' and students' motivation to innovate accounts for 22%. These findings suggest that AI implementation in madrasahs is not driven solely by technological availability, but also by organizational culture and human agency. Internal policy support reflects the strategic role of madrasah leaders in legitimizing digital transformation, providing direction, and creating institutional space for experimentation. Meanwhile, the motivation of teachers and students indicates that AI adoption becomes sustainable when educational actors perceive it as useful for their everyday academic and administrative needs.

This finding aligns with Ayanwale et al., who emphasize that teachers' readiness and intention to use AI are shaped by knowledge, confidence, institutional support, and perceived usefulness.²² In other words, AI adoption cannot be reduced to the availability of digital tools. It requires a supportive ecosystem that includes leadership commitment, teacher capacity, student readiness, and clear ethical direction. In the context of MAN schools in Karawang Regency, internal policy and innovation motivation function as initial capital for developing a value-based AI culture. However, this capital must be strengthened through continuous professional development, mentoring, and institutional guidelines so that AI use does not remain dependent on individual initiative.

However, AI implementation also faces several inhibiting factors. The most prominent barriers are unstable internet connectivity, limited digital infrastructure, outdated devices, and insufficient continuous technical training. These obstacles indicate that digital transformation cannot rely solely on enthusiasm or individual initiative. It requires institutional investment, equitable infrastructure, and structured capacity building. Without these elements, the use of AI may remain fragmented and dependent on individual teacher and staff competence.

The inhibiting factors also reveal that AI implementation in madrasahs faces both technical and ethical challenges. Quantitatively, unstable internet connectivity appears as the most dominant barrier at 27%, followed by limited ongoing technical training at 23%. These figures show that the digital divide remains a serious issue in madrasah transformation. Weak connectivity and limited devices may prevent teachers and students from using AI consistently, while a lack of training may lead to superficial or uncritical use of AI tools. Therefore, infrastructure and capacity building should be understood as interrelated requirements. Better internet access without teacher training may lead to ineffective implementation, while training without reliable infrastructure may not produce sustainable practice.

Beyond technical barriers, the findings also reveal ethical-pedagogical risks, particularly students' dependence on instant AI-generated answers, declining reading habits, and the possibility of academic dishonesty. Nguyen et al. argue that AI in education raises ethical concerns related to personal data, learner autonomy, fairness, transparency, and accountability.²³ These concerns are highly relevant to madrasahs because Islamic education

²² Ayanwale et al., "Teachers' Readiness and Intention to Teach Artificial Intelligence in Schools."

²³ Andy Nguyen et al., "Ethical Principles for Artificial Intelligence in Education," *Education and Information Technologies* 28, no. 4 (April 13, 2023): 4221–41, <https://doi.org/10.1007/s10639-022-11316-w>.

aims not only to improve cognitive achievement but also to cultivate responsibility, honesty, and moral awareness. Thus, the inhibiting factors found in this study should not be interpreted merely as obstacles to technology adoption. They also indicate the need for an ethical governance model that regulates when, how, and for what purposes AI may be used in learning and administration.

Another important barrier is pedagogical and ethical in nature. Several teachers expressed concern that students may become overly dependent on AI-generated answers, resulting in declining reading habits, weaker independent thinking, and potential academic dishonesty. This concern shows that the main challenge of AI implementation in madrasahs is not only technical, but also moral and pedagogical. AI may accelerate access to information, but without ethical regulation and teacher supervision, it may weaken students' literacy, academic integrity, and character formation. Previous studies also warn that AI integration in Islamic education must be guided by ethical principles to prevent dehumanization, misinterpretation of religious values, and the erosion of academic responsibility.²⁴

Thus, the supporting and inhibiting factors found in this study reveal a dual reality. On the one hand, MAN schools in Karawang Regency have strong internal potential for AI adoption, driven by leadership support, teacher initiative, student enthusiasm, and institutional openness to innovation. On the other hand, they still face structural, technical, and ethical challenges. Therefore, the future of AI implementation in madrasahs depends on institutions' ability to balance technological readiness with ethical and spiritual readiness.

The AI–SI Synergy Framework: Toward Civilized AI in Madrasah Digital Transformation

The third objective of this study was to formulate an empirical framework for the synergy between artificial intelligence and spiritual intelligence as the foundation of value-based digital transformation in madrasahs. The findings show that the synergy between AI and SI cannot be explained merely through percentages of effectiveness or efficiency. Rather, this synergy emerges in how madrasah actors define the proper role of AI in relation to Islamic values, teacher authority, and character education.

The interview data show that madrasah leaders, teachers, administrative staff, students, and community or religious leaders share a similar understanding: AI is useful, but it must remain a tool. AI may assist cognitive and administrative tasks, but it must not become the primary source of moral, spiritual, or religious authority. A religious leader stated, “AI is a human creation; it has no conscience. Therefore, it is the humans who must have faith, not the machines.”²⁵ This statement is central to understanding the AI–SI synergy. It confirms that the madrasah ecosystem does not reject modernization, but it also refuses to place

²⁴ Huda et al., “Peran Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam”; Sari, Amin, and Isnanimataka, “Etika Artificial Intelligence (AI) Dalam Pendidikan Islam: Mengatasi Tantangan Distorsi Dan Misinterpretasi.”

²⁵ Interview with religious leader, Karawang Regency, May 2025.

technology above human conscience, religious authority, and spiritual responsibility.

In this study, the AI–SI synergy is conceptualized as “Civilized AI.” This framework positions AI as an assistant for cognitive and administrative work, while spiritual intelligence functions as a filter, guide, and ethical foundation. Teachers remain central as *muaddib*, namely, educators who guide manners, sincerity, empathy, character, and religious responsibility. This distinction is crucial because AI may support *ta’lim* or knowledge delivery. However, it cannot replace the deeper dimensions of *tarbiyah* and *ta’dib*, which require human presence, moral sensitivity, and spiritual depth.²⁶

This argument is strengthened by Sonia et al.²⁷, who show that Islamic leadership and workplace spirituality contribute to teachers’ Islamic performance through Organizational Citizenship Behavior from an Islamic Perspective (OCBIP). Their findings indicate that spiritual values in Islamic educational institutions are not merely normative ideals but also organizational forces that shape teachers’ ethical commitment, voluntary service, and Islamic performance. In the context of Civilized AI, this means that the ethical integration of AI depends not only on technological competence, but also on Islamic leadership, spiritual work culture, and teachers’ moral responsibility as *muaddib*.

The Civilized AI framework is built upon five Islamic value pillars. The first pillar is *amanah*, which emphasizes academic integrity, data honesty, and the prevention of plagiarism. The second is *ikhlas*, which directs the use of technology toward beneficial and worship-oriented purposes. The third is responsibility, which encourages wise and accountable use of digital media. The fourth is *adab*, which guides communication ethics and respectful interaction in digital spaces. The fifth is *tawakal*, which reminds students and educators that AI is only an intermediary, while the ultimate source of knowledge belongs to Allah SWT. These five values show that AI—the frequency of AI use does not measure SI synergy, but rather the ethical arrangement of roles between technology, teachers, students, and institutional values.

Figure 2 illustrates the Civilized AI framework, developed through the synergy of artificial intelligence and spiritual intelligence at MAN Karawang. The framework shows that AI is not positioned as an autonomous authority in education, but as a cognitive and administrative assistant whose use must be directed by Islamic values. The five pillars of *amanah*, *ikhlas*, responsibility, *adab*, and *tawakal* serve as ethical filters that guide how teachers, students, and administrative staff interact with digital technology. Thus, Civilized AI reflects a value-based model of digital transformation in which technological efficiency is integrated with moral discipline, spiritual awareness, and teacher-guided character formation.

²⁶ Arbi Salam Ahmad, Martin Kustati, and Bashori Bashori, “AI Sebagai Pendamping Guru PAI (Telaah Nilai Tarbiyah, Ta’lim, Dan Ta’dib Di Era Digital),” *Indo-MathEdu Intellectuals Journal* 6, no. 8 (December 8, 2025): 11483–97, <https://doi.org/10.54373/imeij.v6i8.4600>.

²⁷ Nur Rahmi Sonia et al., “Islamic Leadership, Workplace Spirituality, and Innovative Work Behavior on Teachers’ Islamic Performance: Mediating Role of OCBIP,” *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 22, no. 1 (July 1, 2024), <https://doi.org/10.21154/cendekia.v22i1.9092>.

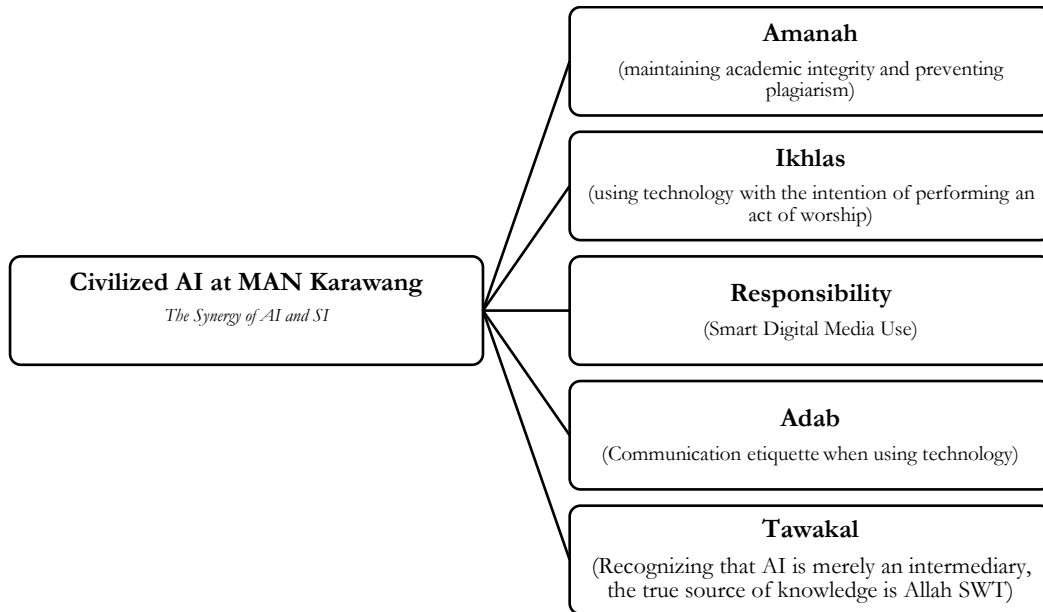


Figure 2. Civilized AI at MAN Karawang

The Civilized AI framework implies that a human-centered and value-centered model should guide madrasah digital transformation. In this model, AI is not rejected, but its authority is limited. AI may support cognitive tasks, administrative automation, and access to learning resources, but it should not replace the teacher's role in ethical judgment, religious interpretation, emotional guidance, and character formation. This distinction is important because AI systems operate through data, algorithms, and pattern recognition, while Islamic education requires conscience, wisdom, adab, and spiritual responsibility.

The Civilized AI framework also shifts the orientation of AI implementation from mere adoption to ethical integration. Ouyang and Jiao distinguish three paradigms of AI in education: AI-directed learning, AI-supported learning, and AI-empowered learning.²⁸ The findings of this study suggest that madrasahs should not remain at the AI-directed stage, where learners become passive recipients of algorithmic outputs. Instead, madrasahs need to move toward AI-supported and value-guided learning, where teachers and students use AI collaboratively while maintaining human agency and spiritual discernment. In this sense, Civilized AI can be understood as a madrasah-based model of human-AI collaboration that integrates technological efficiency with Islamic educational values.

Practically, the Civilized AI framework has three implications. First, madrasahs need written AI ethics guidelines that regulate academic integrity, citation practices, data privacy, and the limits of AI use in assignments and assessments. Second, teachers need continuous AI literacy training that covers not only technical skills but also pedagogical strategies and ethical decision-making. Third, students need to be trained to use AI critically, not merely to obtain instant answers, but to compare, verify, question, and contextualize AI-generated

²⁸ Fan Ouyang and Pengcheng Jiao, "Artificial Intelligence in Education: 'The Three Paradigms,'" *Computers and Education: Artificial Intelligence* 2 (2021): 100020, <https://doi.org/10.1016/j.caeai.2021.100020>.

information under teacher guidance. Through these implications, Civilized AI becomes more than a conceptual model; it becomes a practical framework for ensuring that digital transformation simultaneously strengthens learning effectiveness, administrative efficiency, and spiritual-moral formation.

This framework explains how the quantitative and qualitative findings complement each other. The quantitative data show that AI contributes to learning effectiveness and administrative efficiency, while the qualitative findings explain how those benefits are ethically controlled. AI becomes meaningful for madrasah transformation only when its use is framed by spiritual values and guided by teachers. In other words, the synergy between AI and SI does not lie in the amount of AI use. However, in the ethical arrangement of roles, AI supports technical and cognitive efficiency, while spiritual intelligence preserves moral orientation, religious authority, and human dignity.

The concept of Civilized AI also strengthens the theoretical contribution of this study. Previous studies have discussed the opportunities, risks, and ethical challenges of AI in Islamic education, but this study provides an empirical model derived from the experiences of madrasah stakeholders. The model shows that digital transformation in Islamic education should not be framed as a choice between technology and spirituality. Instead, both can be integrated when technology is subordinated to values and when teachers retain their central role as moral and spiritual guides. Therefore, the digital transformation of MAN schools in Karawang Regency can be understood as a movement toward value-based innovation. AI is accepted when it helps teachers, students, and administrators perform their tasks more effectively. However, its use must remain limited, supervised, and ethically directed so that it does not weaken literacy, independence, adab, or religious responsibility.

CONCLUSION

This study concludes that the synergy between artificial intelligence (AI) and spiritual intelligence (SI) in the digital transformation of MAN schools in Karawang Regency is reflected in three main findings. First, AI is utilized in two principal domains: pedagogical practices and administrative services. In learning, AI assists teachers in preparing teaching materials, developing modules, designing interactive assessments, and enriching instructional resources. In administration, AI supports attendance systems, grade processing, digital archiving, academic reporting, and data-based institutional management. Second, AI implementation is supported by internal madrasah policies, leadership encouragement, and teachers' and students' motivation to innovate. However, it is still constrained by unstable internet connectivity, limited infrastructure, insufficient technical training, and ethical-pedagogical concerns related to students' reliance on instant AI-generated answers.

Third, this study formulates the Civilized AI framework as an empirical model of AI–SI synergy in madrasah digital transformation. This framework positions AI as a cognitive and administrative assistant, while teachers remain central as muaddib who guide character, adab, moral awareness, and spiritual responsibility. The synergy is embodied in five Islamic value pillars: amanah, ikhlas, responsibility, adab, and tawakal. Therefore, the major answer

to this study's title is that digital transformation in madrasahs should not be understood as the replacement of human and spiritual roles by technology, but as the ethical integration of AI under the guidance of Islamic values and teacher-led character formation.

REFERENCES

- Achruh, Achruh, Muhammad Rapi, Muhammad Rusdi, and Ridwan Idris. "Challenges and Opportunities of Artificial Intelligence Adoption in Islamic Education in Indonesian Higher Education Institutions." *International Journal of Learning, Teaching and Educational Research* 23, no. 11 (November 2024): 423–43. <https://doi.org/10.26803/ijlter.23.11.22>.
- Afifah Ramadhanisa, Aliffaa Hani, Azaaro Nadzifah, Dian Izati Nabila, Febri Afriyanti, Siti Naziroh, Liliyana Yolanda, and Nur Mazwin. "Pemikiran Pendidikan Islam Tentang Adab Guru Dan Murid Sebagai Fondasi Etika Pembelajaran Di Era Artificial Intelligence (AI)." *QAZI: Journal of Islamic Studies* 2, no. 2 (December 2, 2025): 568–82. <https://doi.org/10.61104/qz.v2i2.450>.
- Ahmad, Arbi Salam, Martin Kustati, and Bashori Bashori. "AI Sebagai Pendamping Guru PAI (Telaah Nilai Tarbiyah, Ta'lim, Dan Ta'dib Di Era Digital)." *Indo-MathEdu Intellectuals Journal* 6, no. 8 (December 8, 2025): 11483–97. <https://doi.org/10.54373/imeij.v6i8.4600>.
- Aisyah, Nur, Ratna Rufaida, Fathor Rozi, and Alma Vorfi Lama. "Enhancing Student Participation through Gamification-Based Digital Learning Media: A Study of Structural Gamification." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 23, no. 2 (December 3, 2025): 303–23. <https://doi.org/10.21154/cendekia.v23i2.11640>.
- Ayanwale, Musa Adekunle, Ismaila Temitayo Sanusi, Owolabi Paul Adelana, Kehinde D. Aruleba, and Solomon Sunday Oyeler. "Teachers' Readiness and Intention to Teach Artificial Intelligence in Schools." *Computers and Education: Artificial Intelligence* 3 (January 2022): 100099. <https://doi.org/10.1016/J.CAEAI.2022.100099>.
- Baharuddin, Baharuddin, Sahidin Sahidin, Aulia Kholilah, and Fitra Arya Yanuar. "Pendidikan Islam Dalam Era Kecerdasan Buatan: Membangun Peradaban Berbasis Etika Dan Teknologi Di Indonesia." *JiIP - Jurnal Ilmiah Ilmu Pendidikan* 8, no. 4 (April 4, 2025): 3782–91. <https://doi.org/10.54371/jiip.v8i4.7432>.
- Crompton, Helen, and Diane Burke. "Artificial Intelligence in Higher Education: The State of the Field." *International Journal of Educational Technology in Higher Education* 20, no. 1 (April 24, 2023): 22. <https://doi.org/10.1186/s41239-023-00392-8>.
- Darmawan, Muhammad Yoggi Aqsal Darmawan, Purnomo Purnomo, and Sabarudin Sabarudin. "Pemanfaatan Akal Imitasi (AI) Sebagai Media Pembelajaran Dalam Pembentukan Literasi Kritis Dan Etika Digital Islami Mahasiswa Pendidikan Agama Islam UIN Salatiga." *Action Research Journal Indonesia (ARJI)* 7, no. 4 (November 27, 2025). <https://doi.org/10.61227/arji.v7i4.623>.
- Fitriyah, Ainul, Yuyun Nur Fauziyah, Elik Cahyaning Devikawati, Mad Rojikin, and Rofiatul Hosna Neviya. "AI Dalam Kelas PAI SD: Tantangan Humanisme Dan Akhlak Guru." *Jurnal Pendidikan: Riset Dan Konseptual* 10, no. 1 (January 1, 2026): 133–41.

https://doi.org/10.28926/riset_konseptual.v10i1.1430.

- Hadi, Janes Kurnia, Haniyatul Latifah, Diyoba Azhar Fuadi, Fauzan Fauzan, Yona Christiana, Tomi Hidayat, and Rifa'i Rifa'i. "Kolaborasi Manusia-Mesin Dalam Pendidikan: Strategi Guru Beradaptasi Dengan Teknologi AI." *RIGGS: Journal of Artificial Intelligence and Digital Business* 4, no. 2 (July 19, 2025): 6329–33. <https://doi.org/10.31004/riggs.v4i2.1583>.
- Hasibuan, Ade Zulkarnain, Munjiat Setiani Asih, Irwanda Syahputra, Cut Alna Fadhilla, and Chichi Rizka Gunawan. "Transformasi Cara Belajar Siswa Dengan Teknologi AI Di Genggaman Menggunakan ChatGPT." *Jurnal Hasil Pengabdian Masyarakat (JURIBMAS)* 3, no. 3 (March 30, 2025): 188–94. <https://doi.org/10.62712/juribmas.v3i3.336>.
- Huda, Miftahul, Irwansyah Suwahyu, Miftahul Huda, and Irwansyah Suwahyu. "Peran Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam." *REFERENSI ISLAMKA: Jurnal Studi Islam* 2, no. 2 (August 27, 2024): 53–61. <https://doi.org/10.61220/ri.v2i2.005>.
- Humaisi, M. Syafiq, Muhammad Thoyib, M. Nurdin, Ryan Rahmawati, and Badru Ngoh. "Pesantren-Based Transformational Leadership in the Development of International Madrasah Innovation." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 22, no. 1 (July 1, 2024). <https://doi.org/10.21154/cendekia.v22i1.8781>.
- Ismail, Ismail, Muhammad Abrar Parinduri, and Florante P. Ibarra. "Strengthening The Ideology of Islamic Religious Education in The Era of Technological Disruption." *Jurnal Ilmiah Ilmu Terapan Universitas Jambi* 9, no. 2 (April 2025): 465–73. <https://doi.org/10.22437/jituj.v9i2.41841>.
- Jamal, Syukron, Elan Zaelani Rahman, and Hasanudin Hasanudin. "Integrasi Nilai Akhlak, Adab, Dan Maqasid Syari'ah Dalam Pemanfaatan Teknologi Pendidikan." *Ta'dibiya* 5, no. 2 (October 1, 2025): 58–70. <https://doi.org/10.61624/japi.v5i2.235>.
- Kobandaha, Firmansah, Annisa Nuraisyah Annas, Putriani L. Maliki, and Nur Gamar. "Manajemen Pendidikan Islam Berbasis Artificial Intelligences Di Era Digital Sebuah Tinjauan Literatur." *RIGGS: Journal of Artificial Intelligence and Digital Business* 4, no. 1 (April 30, 2025): 576–82. <https://doi.org/10.31004/riggs.v4i1.822>.
- Masrur, Ali. "Relasi Iman Dan Ilmu Pengetahuan Dalam Perspektif Al-Quran (Sebuah Kajian Tafsir Maudhui)." *Al-Bayan: Jurnal Studi Ilmu Al-Qur'an Dan Tafsir* 1, no. 1 (June 28, 2016): 35–52. <https://doi.org/10.15575/al-bayan.v1i1.1672>.
- Maulidi, Fajar. "Pemanfaatan Artificial Intelligence (AI) Dalam Pembelajaran Pendidikan Agama Islam: Peluang Dan Tantangan Di Era Disrupsi Teknologi." *Education Achievement: Journal of Science and Research*, August 1, 2025, 722–30. <https://doi.org/10.51178/jsr.v6i2.2791>.
- Miles, Matthew B, A Michael Huberman, and Johnny Saldaña. "Qualitative Data Analysis : A Methods Sourcebook," Third edition. Thousand Oaks, California: SAGE Publications, Inc., 2014.
- Nguyen, Andy, Ha Ngan Ngo, Yvonne Hong, Belle Dang, and Bich-Phuong Thi Nguyen. "Ethical Principles for Artificial Intelligence in Education." *Education and Information*

- Technologies* 28, no. 4 (April 13, 2023): 4221–41. <https://doi.org/10.1007/s10639-022-11316-w>.
- Nirwana AN, Andri, Alfian Rifai, Mohamad Ali, Triono Ali Mustofa, Viky Nur Vambudi, Muh. Nur Rochim Maksum, and Mush'ab Umar Budihargo. "SWOT Analysis of AI Integration in Islamic Education: Cognitive, Affective, and Psychomotor Impacts." *Qubahan Academic Journal* 5, no. 1 (March 2025): 476–503. <https://doi.org/10.48161/qaj.v5n1a1498>.
- Nur Rahmi Sonia, Sutiah, Wahidmurni, and Soeharto. "Islamic Leadership, Workplace Spirituality, and Innovative Work Behavior on Teachers' Islamic Performance: Mediating Role of OCBIP." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 22, no. 1 (July 1, 2024). <https://doi.org/10.21154/cendekia.v22i1.9092>.
- Nurdiyanto, Nurdiyanto, Muhammad Thoriquil Islam, Nawa Marjany, Maslani, and Hasbiyallah. "Issues of Professionalism and Competency of Islamic Religious Education Teachers in Facing the Society 5.0 Era." *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 22, no. 1 (July 1, 2024). <https://doi.org/10.21154/cendekia.v22i1.8782>.
- Ouyang, Fan, and Pengcheng Jiao. "Artificial Intelligence in Education: The Three Paradigms." *Computers and Education: Artificial Intelligence* 2 (2021): 100020. <https://doi.org/10.1016/j.caeai.2021.100020>.
- Pohan, Rahmadanni, and Nurmaliana Pohan. "Integrasi Artificial Intelligence Dalam Sistem Manajemen Pendidikan Islam Untuk Meningkatkan Efisiensi Administrasi." *Sistem Pendukung Keputusan Dengan Aplikasi* 4, no. 2 (September 30, 2025): 101–10. <https://doi.org/10.55537/spk.v4i2.1305>.
- Pratama, Arizqi Ihsan, and Muhd Rosydi Muhammad. "Artificial Intelligence in Islamic Education: Opportunities and Challenges in the Digital Era." *Madania: Jurnal Kajian Keislaman* 29, no. 1 (July 14, 2025): 133. <https://doi.org/10.29300/madania.v29i1.7766>.
- Pratiwi, Rachel Theresa Laras, and Mahmuddin Yunus. "Manfaat Dan Tantangan Penggunaan Artificial Intelligence (AI) Bagi Guru Dan Peserta Didik Di Era Society 5.0." *Journal of Innovation and Teacher Professionalism* 3, no. 2 (November 13, 2024): 488–94. <https://doi.org/10.17977/um084v3i22025p488-494>.
- Rahma, Isni Dwi, Rianti Rahmadania, Tri Rahayu Setya Ningrum, Yoni Edwar, Yogi Rizki Oktara, Tomi Hidayat, and Rifa'i Rifa'i. "Transformasi Peran Guru Di Era Kecerdasan Buatan: Dari Pengajar Menjadi Fasilitator Digital." *RIGGS: Journal of Artificial Intelligence and Digital Business* 4, no. 2 (July 18, 2025): 6198–6203. <https://doi.org/10.31004/riggs.v4i2.1566>.
- Sari, Ana Kurnia, Khoirul Amin, and Mustiza Isnanimataka. "Etika Artificial Intelligence (AI) Dalam Pendidikan Islam: Mengatasi Tantangan Distorsi Dan Misinterpretasi." In *IC-TiaRS (International Conference on Tradition and Religious Studies)*. Palembang: Fakultas Ushuluddin dan Pemikiran Islam UIN Raden Fatah Palembang, 2024.
- Septiana, Rahma Alisa, Imam Sopingi, and Athi' Hidayati. "Adab Penggunaan Artificial Intelligence (AI) Dalam Keilmuan: Tinjauan Kitab Adabul Alim Wal Muta'allim."

Revorma: Jurnal Pendidikan Dan Pemikiran 5, no. 1 (May 5, 2025): 71–82. <https://doi.org/10.62825/revorma.v5i1.134>.

Sukma, Gisca Dea, Fahira Alifia Farisa, Lita Kus Amelia, Marsya Arifa Zahran, and Rama Wijaya Abdul Rozak. “Pemahaman Pelajar Tentang Kecerdasan Buatan Dan Implikasinya Terhadap Literasi.” *JURNAL JENDELA PENDIDIKAN* 5, no. 02 (May 10, 2025): 212–23. <https://doi.org/10.57008/jjp.v5i02.1293>.

Wakhidah, Esti Nur, Maman Sulaeman, Diksi Metris, Aji Priambodo, and Riyan Dwi Yulian Prakoso. “Peran Artificial Intelligence Dalam Transformasi Sumber Daya Manusia Pendidikan: Peningkatan Kualitas Vs Penggantian.” *Journal Development* 12, no. 1 (June 28, 2024): 10–23. <https://doi.org/10.53978/jd.v12i1.383>.

Wedi, Agus, Dina Mardiana, and Umiarso Umiarso. “Digital Transformation Model of Islamic Religious Education in the AI Era: A Case Study of Madrasah Aliyah in East Java, Indonesia.” *International Journal of Learning, Teaching and Educational Research* 24, no. 8 (August 2025): 842–63. <https://doi.org/10.26803/ijlter.24.8.37>.

Zawacki-Richter, Olaf, Victoria I. Marín, Melissa Bond, and Franziska Gouverneur. “Systematic Review of Research on Artificial Intelligence Applications in Higher Education – Where Are the Educators?” *International Journal of Educational Technology in Higher Education* 16, no. 1 (December 28, 2019): 39. <https://doi.org/10.1186/s41239-019-0171-0>.