Tarbawiyah : Jurnal Ilmiah Pendidikan
(e-ISSN) 2579-325X; (p-ISSN) 2579-3241
https://e-journal.metrouniv.ac.id/index.php/tarbawiyah/
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Management of Artificial Intelligence - Based Islamic Religious Education Learning Innovation in Elementary Schools: Policy Implications for Teachers' Digital Transformation

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Article Information

Article history:
Received
January 04, 2026
Revised
April 14, 2026
Accepted
June 05, 2026

Abstract

Advances in Artificial Intelligence (AI) technology have brought significant changes to learning practices, including in PAI at the elementary school level. However, the implementation of AI-based learning in Islamic Religious Education (IRE) is closely related to innovation management, school leadership, and teacher readiness in facing digital transformation. This study aims to analyze the management of AI-based IRE learning innovation and its implications for teachers' digital transformation policies in elementary schools. This study uses a qualitative field research design. Data were collected through in-depth interviews, observations, and document analysis involving school principals and IRE teachers in several elementary schools in Pangandaran Regency, West Java. The data were analyzed thematically to identify patterns of innovation management, learning practices, and policy implementation. The findings show that AI-based IRE learning innovation is managed adaptively and contextually, with AI serving as a learning tool rather than replacing the role of teachers. Teachers remain central in guiding students' religious values and character, while AI supports lesson planning, material delivery, and evaluation. For teachers, AI use can improve efficiency in lesson planning, material preparation, differentiation, and assessment; however, it also introduces new burdens and risks, such as verifying AI accuracy, preventing value-inconsistent content, protecting students' data/privacy, and avoiding over-dependence. These implications justify the need for clear school-level guidance and continuous teacher AI/digital literacy development.

Keywords: Islamic Religious Education; Artificial Intelligence; Learning Innovation; Education Management; Elementary School.

How to cite: Krismayanti, Dwi Puspa; Firahmatika, Syifa; Dari, Nur Oktiani Wulan; Rizal, Soni Samsu; Hamdani, Djaswidi Al; Qoriah, Elsa. *Innovation in Islamic Religious Education Learning Based on Artificial Intelligence in Elementary Schools: Policy Implications for Teachers' Digital Transformation*, Volume 10, Issue 01, Januari-Juni 2026; 25-36; https://doi.org/10.32332/tarbawiyah.v10.i1.12694

INTRODUCTION

The rapid advancement of digital technology, particularly AI is increasingly shaping the direction of educational transformation across the globe, including at the elementary school level. In this context, AI is no longer positioned simply as a technological aid; rather, it has begun to influence how learning is designed, how teachers carry out their roles, and how educational processes are managed within schools. A growing body of research highlights that AI can contribute to more

personalized learning experiences, improve instructional efficiency, and support data-driven decision-making (Almasri 2024; Ali et al. 2024; Chiu 2024; Alotaibi 2024; Mukkala 2025). However, these potential benefits cannot be fully realized without strong management practices and leadership that are capable of guiding its integration into meaningful classroom practices, particularly in the context of Islamic Religious Education at the elementary level.

This study does not merely address the question of whether AI can be utilized in Islamic Religious Education learning. Instead, it focuses on how schools manage and implement AI-based learning innovations in ways that remain pedagogically appropriate, ethically responsible, and aligned with Islamic values. This issue is becoming increasingly urgent as generative AI technologies develop rapidly, while many elementary schools still struggle with limited policy frameworks, insufficient institutional support for teachers, and the absence of clear governance mechanisms to ensure responsible and effective use (UNESCO 2023). These challenges are closely linked to the broader issue of teachers' digital transformation, which requires not only technical skills but also guidance, support, and structured policy direction.

From an educational management perspective, learning innovation is understood as a complex and evolving process rather than a straightforward implementation of new tools. It is shaped by leadership, school culture, and the institution's capacity to adapt to change (Sauphayana 2021; Schophuizen et al. 2023). In line with this, studies on educational leadership emphasize the importance of adaptive and digitally oriented leadership in sustaining innovation, particularly in bridging the gap between policy directions and classroom practices (Ellis 2025; Bohari et al. 2024; Akhmad 2025). Without well-planned and strategic management, the adoption of AI in elementary education risks remaining superficial, offering limited contribution to improving the quality of Islamic Religious Education and the broader digital transformation of teachers.

Teachers hold a central role in the implementation of artificial intelligence (AI)-based learning innovation, particularly in elementary education settings. As educational technologies continue to evolve, teachers are expected to continuously develop both their digital literacy and professional competencies. However, in practice, they often operate within policy environments that are normative and predominantly top-down in nature. This creates a situation where teachers are positioned as implementers rather than active contributors in shaping innovation.

A number of studies have identified a persistent gap between digital transformation policies and what actually occurs in classroom practices. This gap is shaped by several factors, including varying levels of teacher readiness, differing perceptions toward technology, and the extent of institutional support available (Amemasor et al. 2025; Hernández-Sellés and Massigoge-Galbis 2024; Liu and Xu 2025; Muthanna and Sang 2023). As a result, the integration of AI in learning often does not fully align with pedagogical needs or classroom realities.

This condition suggests that AI-based learning innovation should not be viewed as a straightforward policy implementation process. Instead, it needs to be understood as a dynamic negotiation involving educational policies, school management strategies, and teachers' professional practices. When this negotiation process is not well managed, several consequences may arise, such as superficial adoption of AI tools, increased teacher workload without meaningful instructional improvement, and resistance or

uncertainty among teachers toward digital transformation. In the long term, these challenges can hinder the effectiveness of AI integration and limit its potential contribution to improving the quality of Islamic Religious Education learning in elementary schools.

If teachers avoid AI entirely while students' learning environments become increasingly saturated with AI, classrooms may experience slower instructional preparation, reduced responsiveness to diverse learner needs, and widening disparities between digitally proactive and digitally constrained schools. More importantly, in the absence of teacher-guided adoption, students may still access AI through informal channels with limited ethical oversight. This situation increases the risks of misinformation, plagiarism, and religious content that is inaccurate or misaligned with core values. For these reasons, teacher-mediated and policy-guided AI use functions not only as a pedagogical strategy, but also as a protective measure to safeguard learners and learning integrity.

In the context of IRE at the elementary school level, managing learning innovation has its own characteristics and challenges. IRE is not only oriented towards cognitive achievement, but also towards shaping students' values, attitudes, and religious identity from an early age (Alkouatli 2018). Various studies show that the use of technology in IRE learning still tends to be instrumental and normative, so that the attention given to managerial and policy aspects that support sustainable learning innovation is relatively limited (Amaly et al. 2023; Mintasih, Sukiman, and Purnama 2024; Azman, Hamzah, and Abd Razak 2025; Siregar et al. 2025). Studies that specifically examine the management of AI-based Islamic religious education learning innovation, especially at the elementary school level, are still very limited.

On the other hand, much of the existing research on AI in education tends to concentrate on higher education settings or on general subject areas. There is still limited empirical evidence explaining how AI-based learning innovations are actually managed in primary schools, particularly within the context of religious education (Kim 2024; Alwaqdani 2025). This imbalance in the literature suggests that important aspects of implementation at the elementary level remain underexplored.

This gap underscores the need for more context-sensitive research that examines how AI-based innovations in Islamic Religious Education are organized and managed in real school settings. It is especially important to understand how such innovations are connected to broader policies on teachers' digital transformation, as these policies play a crucial role in shaping teachers' readiness, practices, and engagement with AI in elementary education.

Recent literature reinforces that AI integration in primary education remains uneven and is often under-theorized from a management perspective. Systematic evidence indicates that AI use in primary settings spans multiple subjects and requires teacher professional development as well as pedagogical scaffolding (Aravantinos et al. 2024). Empirical work on generative AI in school contexts suggests potential benefits for personalizing learning materials, while also emphasizing the need for careful classroom orchestration and ethical safeguards (Jauhiainen and Guerra 2024). Studies on teachers' perceptions in primary/K–12 contexts further report mixed attitudes and predominantly augmentation-level uses. These findings underscore the importance of leadership and policy support to move beyond individual experimentation and toward more systematic implementation (Calleja and Camilleri 2025; An and James 2025).

Against this background, this study aims to examine the management of AI-based Islamic Religious Education learning innovations in elementary schools and their implications for digital transformation policies for teachers. This study uses a qualitative approach with data collection through interviews, observations, and document analysis in several elementary schools. The data is analyzed thematically to identify patterns of innovation management, teacher learning practices, and the dynamics of digital policy at the school level. The results of this study are expected to contribute theoretically to the study of educational innovation management and provide practical recommendations for policymakers and education practitioners in supporting contextual and sustainable digital transformation in Islamic Religious Education learning.

Therefore, researching this topic is important for three reasons: (1) to document how AI-based IRE innovations are managed at the school level in practice, (2) to identify governance gaps between teacher initiatives and institutional policy, and (3) to formulate actionable policy implications for teachers' digital transformation, including AI literacy, ethical guidelines, workload recognition, and infrastructural support. Without such evidence, digital transformation in religious education may become ad hoc and overly dependent on individual teachers, which can increase inequality and ethical vulnerability across schools (UNESCO 2023).

This study employed qualitative field research to explore the management of AI-based IRE learning innovation in elementary schools in Pangandaran Regency, West Java. A qualitative design was chosen to capture the contextual, value-laden, and negotiated nature of innovation practices in religious education settings. Research sites and participants: This study was conducted in several elementary schools that had begun to pilot the use of AI and other digital tools in Islamic Religious Education (IRE) learning. Key informants comprised school principals, who represented leadership and policy actors, and IRE teachers, who served as the main implementers at the classroom level. Participants were selected through purposive sampling based on their direct involvement in AI-supported learning practices and their roles in school-level management and decision-making related to digital learning. Data collection: Data were collected using three techniques: (1) in-depth semi-structured interviews, (2) non-participant observations in classrooms and relevant school settings, and (3) document analysis. The document corpus consisted of school- and teacher-level materials that were relevant to innovation management, including lesson plans or teaching modules, assessment instruments, digital learning media used in IRE instruction, meeting minutes or internal memos related to digital learning initiatives, and other supporting documents available at the participating schools.

Data analysis: All qualitative data were compiled, managed, and analyzed using thematic analysis. The coding process began with open coding and proceeded to more focused categories that reflected key management dimensions, namely planning, organizing support, implementation, monitoring and evaluation, and sustainability. Triangulation across interviews, observations, and documents was applied to enhance the credibility of the findings. When feasible, member checking was conducted with selected informants to validate interpretations and ensure alignment with participants' perspectives. Ethical considerations: Participants were informed about the purpose of the study and the intended use of the data prior to data collection. Interview and observation records were anonymized in reporting, and any sensitive school-related

information was handled confidentially. These procedures were implemented in accordance with established ethical standards for qualitative research.

RESULTS AND DISCUSSION

The results of the study show that artificial intelligence (AI)-based innovations in IRE in elementary schools in Pangandaran Regency are developing gradually and contextually. The use of AI and digital technology in IRE learning does not appear to be a fully structured policy implementation, but rather a practice negotiated between teacher initiatives, school management support, and considerations of religious values and educational ethics. These results confirm that AI-based learning innovation is a complex social and managerial process, not merely a matter of technology adoption.

The characterization of development as gradual and contextual is supported by converging evidence from multiple data sources. Interview narratives indicate a progression from the use of basic digital media, such as videos and quizzes, to more limited applications of generative AI for teacher preparation. Observations further show that AI is used selectively, primarily for pre-class planning rather than for unrestricted pupil use. In addition, document traces, including learning materials and assessment items, demonstrate incremental adoption over time rather than immediate, school-wide standardization.

The initial interview results show that AI-based IRE learning innovation is driven more by teachers' personal initiatives than by formal school policies. IRE teachers utilize various digital technologies, such as interactive quiz applications, learning videos, and AI platforms such as ChatGPT, to help prepare learning materials, questions, and evaluations. However, this practice has not been fully institutionalized in the form of school guidelines or operational standards. One IRE teacher stated that the use of technology "has so far been more of a personal initiative to enrich the classroom atmosphere." These findings indicate a pattern of bottom-up innovation, where innovative practices precede formal regulations. This condition is in line with studies on the implementation of education policies. (Young and Lewis 2015; Muthanna and Sang 2023).

Classification of AI-Based Innovation Management Patterns

Table 1. Classification of AI-Based IRE Innovation Management in Elementary Schools

Management Dimension	Empirical Findings	Characteristics	Implications
Planning	Teachers use AI for lesson preparation and material development	Bottom-up and teacher initiated	Requires policy support and standardization
Organizing	Informal coordination between teachers and principals	Collaborative and flexible	Encourages innovation but lacks formal governance
Implementation	AI used for material creation, quizzes, assessments, and learning media	Teacher-controlled utilization	AI functions as a supporting tool rather than a replacement

Management Dimension	Empirical Findings	Characteristics	Implications
Monitoring and Evaluation	Conducted individually by teachers	Limited institutional oversight	Potential inconsistency in implementation quality
Sustainability	Dependent on teacher competence and initiative	Innovation remains person-dependent	Needs institutionalization and infrastructure support

Based on the categories above, AI-based Islamic Religious Education invention is now in a transitional phase between personal testing and institutional acceptance. Most creative projects are still focused at the classroom level and have not yet been turned into official corporate policies. This result indicates that school administration systems have to change from encouraging leadership to organized governance frameworks that guarantee correctness and continuity control of artificial intelligence in religious instruction environments.

From a management perspective, the innovation process begins with classroom-level planning. Teachers identify IRE topics that require clearer visualization or stronger contextualization and then use AI-supported tools to produce initial drafts of explanations, question banks, and differentiated tasks. These outputs are not adopted verbatim; instead, teachers curate, verify, and adapt them to curriculum objectives and age-appropriate language. Organizing support typically develops through informal coordination with principals to secure practical arrangements, such as permission to use devices, access to internet connectivity, and the availability of classroom media. Support is also strengthened through peer sharing among teachers and the formation of ad hoc professional learning communities. Overall, these patterns suggest that governance currently depends largely on relational leadership rather than formally articulated standard operating procedures.

Furthermore, this study found that teachers and principals understand AI as a pedagogical tool, not as a substitute for the role of IRE teachers. All informants emphasized that AI must be under the control of teachers, especially since IRE has normative objectives that emphasize character building and spiritual values. One principal stated that AI "is not meant to replace the role of teachers, but as an intelligent assistant that helps create more adaptive learning." This opinion indicates that there are ethical limitations in the use of technology. These findings support the argument from previous studies that collaboration between teachers and AI in education is only effective if the pedagogical and moral roles of teachers remain central and in line with the Islamic educational perspective, which places exemplary behavior at the core of the learning process. (Kim 2024; Alkouatli 2018).

In practice, AI is primarily positioned as a teacher-facing assistant rather than as a pupil-facing autonomous tutor. Teachers use AI to draft lesson scenarios, propose examples and short narratives that are subsequently cross-checked against authoritative sources, generate formative questions and scoring rubrics, and design engaging activities such as interactive quizzes to sustain students' attention. During instruction, teachers remain responsible for contextual explanation, moral exemplification (*uswah*),

and the correction of misconceptions. These pedagogical and ethical functions are central to Islamic Religious Education and therefore cannot be delegated to AI.

Teacher–AI Collaboration Model in Islamic Religious Education

The study reveals four major domains of teacher–AI collaboration: content generation and adaptation; learning activity design; assessment preparation; and administrative efficiency. Conversely, activities involving moral exemplification, spiritual mentoring, religious interpretation, and character formation remain exclusively within the professional authority of teachers. This distinction is particularly important in Islamic Religious Education, where educational success is measured not only by knowledge acquisition but also by the development of values and behavior.

The findings indicate that the relationship between teachers and artificial intelligence follows an augmentation model rather than an automation model. In this configuration, AI serves as a cognitive and administrative assistant, while teachers retain responsibility for instructional decisions, ethical judgment, value transmission, and student character development. This model aligns with contemporary perspectives on teacher–AI collaboration, which emphasize complementarity rather than replacement.

Third, the results show tension between the demands of digital transformation and the normative goals of IRE. On the one hand, teachers and schools recognize that digital technology and AI can improve the visualization of materials, learning efficiency, and student engagement. However, on the other hand, there are concerns that over-reliance on technology may reduce the spiritual touch and educational relationship between teachers and students. One informant emphasized that “the goal of IRE is to change morals, while technology poses a major challenge for IRE teachers.” This concern shows that AI-based learning innovations are not rejected, but are critically negotiated to remain in line with Islamic values. These findings are relevant to previous studies that emphasize the need for AI policies and practices in education to consider ethical and pedagogical dimensions, as well as to other findings in previous studies that highlight the complexity of educational leadership in the post-digital era.(Chiu 2024; Ellis 2025).

The integration of AI reshapes teachers’ work in two directions. It can reduce time devoted to routine preparation tasks, including drafting worksheets and producing initial learning materials, while simultaneously increasing the demand for higher-order professional judgement in validation, ethical screening, and pedagogical redesign. Accordingly, teacher digital transformation should incorporate AI literacy competencies that support instructional decision-making, such as designing prompts aligned with pedagogical aims, applying systematic fact-checking strategies, recognizing bias and hallucination risks, protecting student data and privacy, and integrating AI-generated outputs with the normative objectives of Islamic Religious Education.

Fourth, this study shows that teachers' readiness to utilize technology and AI is relatively more advanced than the available systems and infrastructure. Many IRE teachers acquire digital competencies through self-directed learning, teacher communities, training, and professional programs such as PPG. However, limitations in facilities and infrastructure, internet stability, and the absence of comprehensive technical policies are obstacles to sustainable innovation development. This reinforces previous findings that teacher professional development often progresses faster than institutional structural support, so that innovation tends to depend on individual capacity.(Amemasor et al. 2025).

Table 2. Opportunities and Challenges of AI-Based IRE Innovation

Opportunities	Challenges
Faster lesson preparation	Limited infrastructure
More engaging learning media	Lack of formal policies
Better differentiated instruction	Unequal digital competencies
Increased student engagement	Ethical concerns
Enhanced assessment development	Potential over-dependence on AI
Access to broader educational resources	Risk of inaccurate religious content

The presence of possibilities and difficulties shows that digital transformation is both a business transformation and a technology process. Therefore, effective execution calls for striking a balance between technical development and instructional integrity, moral protection, and institutional readiness.

The sustainability of AI-based IRE innovation depends on whether schools develop monitoring and evaluation mechanisms beyond individual teacher efforts. At minimum, schools can formalize: (1) acceptable-use guidelines for AI tools, (2) a review process for AI-generated religious content to prevent inaccuracies, (3) shared repositories of vetted learning materials, and (4) periodic professional development aligned with teacher needs and local infrastructure. Such managerial steps translate bottom-up experimentation into an institutionally supported innovation system.

Policy Implications for Teachers' Digital Transformation

One of the most significant findings of this study concerns the implications of AI integration for teachers' digital transformation policies. The evidence suggests that digital transformation policies should move beyond technology provision and focus on developing sustainable ecosystems for innovation. Four policy priorities emerge from the findings:

1. AI Literacy Development
   Teachers require systematic training not only in technical AI utilization but also in prompt engineering, content validation, and ethical AI use.
2. Ethical Governance Frameworks
   Schools need clear guidelines regarding acceptable AI use, data protection, religious content verification, and student privacy.
3. Infrastructure and Access Support
   Sustainable innovation requires reliable internet access, digital devices, and institutional technical support.
4. Recognition of Digital Innovation Work
   Teachers' efforts in developing AI-supported learning innovations should be formally recognized within professional development and performance evaluation systems.

These policy priorities demonstrate that teacher digital transformation is fundamentally an organizational and managerial challenge rather than solely a technological one. Consequently, effective AI integration depends on the alignment of teacher capacity, school leadership, and educational policy frameworks.

In conclusion, the findings and discussion in this study confirm that AI-based learning innovation management in elementary schools is an adaptive process involving negotiation between teacher practices, school leadership, and policy frameworks. AI

serves as a driver of pedagogical innovation, but its effectiveness is highly dependent on educational leadership, teacher readiness, and a commitment to maintaining Islamic values in learning. The results of this study expand the discussion on educational innovation by showing that the success of digital transformation in IRE learning depends not only on technology, but also on innovation management that is sensitive to the values and culture of the school context.

CONCLUSIONS

This study shows that AI-based innovation in IRE learning in Pangandaran elementary schools is managed as a gradual, context-sensitive process shaped by teacher initiative, leadership support, and value-based considerations. In practice, AI functions primarily as a teacher-facing resource for lesson planning, material development, and assessment, while teachers remain responsible for guiding the spiritual and ethical dimensions of learning. The principal managerial constraint is the misalignment between teachers' bottom-up experimentation and the limited availability of institutional policy and infrastructure, which undermines sustainability. Accordingly, the study underscores the need for school- and local government-level policies that strengthen teacher AI literacy, establish ethical and operational guidance, and secure adequate infrastructure to support responsible digital transformation in IRE learning.

Result of this study also shows that the management of AI-based learning innovation in IRE in elementary schools is carried out in a gradual, contextual, and adaptive manner. Learning innovation does not arise as a result of comprehensive formal policies, but rather develops through teacher initiatives that are negotiated with school leadership and adapted to the normative values of PAI. The results of this study confirm that the use of AI in PAI learning cannot be understood solely as a technological issue, but rather as a complex managerial and pedagogical process. From the results of this study, AI is considered a learning tool that helps teachers in planning, preparing materials, and evaluating, without taking over the central role of teachers as educators of values and character builders. IRE teachers still have full control over the direction of learning, especially in maintaining the spiritual and ethical dimensions of education. This shows that there is critical awareness at the elementary school level that digital transformation must be in line with the normative and philosophical goals of religious education. In addition, this study reveals a gap between individual teacher readiness and institutional readiness. Teachers' digital capabilities have developed relatively through self-directed learning and professional experience, while policy support, infrastructure, and technical guidelines for AI use remain limited. This gap has an impact on the sustainability of learning innovation, which tends to depend on the personal capacity of teachers rather than institutionalized school management systems.

Theoretically, this study contributes to the study of educational innovation management by expanding the understanding of AI application in the context of religious education at the elementary school level, which has been rarely researched. In practice, the results of this study emphasize the importance of responsive educational leadership, the strengthening of contextual digital transformation policies, and the continuous professional development of teachers so that AI-based IRE learning innovation can be meaningful and sustainable. This study has limitations in terms of location coverage and number of informants, so the findings are contextual and not intended for broad generalization. Thus, it is recommended to conduct further research

involving more diverse regional contexts and different methodological approaches to enrich the understanding of AI-based learning innovation management at various levels of education.

REFERENCES

Akhmad. 2025. "Digital Leadership Practices in Educational Management: Trends and Challenges." International Journal of Research in Social Science and Humanities. https://doi.org/10.47505/IJRSS.2025.

Ali, Dler, et al. 2024. "ChatGPT in Educational Settings: A Review of Potential Benefits and Challenges." Computers and Education: Artificial Intelligence 7: 100253. https://doi.org/10.1016/j.caeai.2024.100253.

Alkouatli, Claire. 2018. "Pedagogies in Becoming Muslim : Contemporary Insights from Islamic Traditions on Teaching , Learning , and Developing," no. Sahin 2013. https://doi.org/10.3390/rel9110367.

Almasri, Firas. 2024. "Exploring the Impact of Artificial Intelligence in Teaching and Learning of Science : A Systematic Review of Empirical," 977–97.

Alotaibi, Nayef Shaie. 2024. "The Impact of AI and LMS Integration on the Future of Higher Education : Opportunities , Challenges , and Strategies for Transformation."

Alwaqdani, Mohammed. 2025. "Investigating Teachers' Perceptions of Artificial Intelligence Tools in Education: Potential and Difficulties." *Education and Information Technologies* 30 (3): 2737–55. https://doi.org/10.1007/s10639-024-12903-9.

Amaly, A. M., Y. Herdiana, U. Ruswandi, and B. S. Arifin. 2023. "The Necessity and Reality of Islamic Religious Education in Schools." Jurnal Ilmiah Islam Futura 23 (1): 1–19. https://doi.org/10.22373/jiif.v23i1.13190.

Amemasor, Stephen Kwashie, Stephen Opoku Oppong, Ben-bright Benuwa, and Daniel Danso Essel. 2025. "A Systematic Review on the Impact of Teacher Professional Development on Digital Instructional Integration and Teaching Practices," no. May: 1–14. https://doi.org/10.3389/feduc.2025.1541031.

An, Yunjo, and Shadarra James. 2025. "Generative AI Integration in K-12 Settings: Teachers' Perceptions and Levels of Integration." *TechTrends* 69 (6): 1304–17. https://doi.org/10.1007/s11528-025-01114-9.

Aravantinos, Spyridon, Konstantinos Lavidas, Iro Voulgari, Stamatios Papadakis, Thanassis Karalis, and Vassilis Komis. 2024. "Educational Approaches with AI in Primary School Settings: A Systematic Review of the Literature Available in Scopus." Education Sciences 14 (7): 744. https://doi.org/10.3390/educsci14070744.

Aseery, Ahmad, and Ahmad Aseery. 2024. "Enhancing Learners ' Motivation and Engagement in Religious Education Classes at Elementary Levels Education Classes at Elementary Levels." *British Journal of Religious Education* 46 (1): 43–58. https://doi.org/10.1080/01416200.2023.2256487.

Azman, Nor Alniza. 2025. "MALAYSIAN JOURNAL OF LEARNING" 22 (2): 140–60.

Bohari, Asmah, Walton Wider, Lester Naces Udang, Leilei Jiang, and Jem Cloyd M. Tandon. 2024. "Transformational Leadership's Role in Shaping Education 4.0 within Higher Education." Journal of Infrastructure, Policy and Development 8 (8): 4900. https://doi.org/10.24294/jipd.v8i8.4900.

Calleja, James, and Patrick Camilleri. 2026. "Primary School Teachers ' Perceptions towards the Use of Generative AI in Teaching Using Lesson Study" 14 (3): 237–52. https://doi.org/10.1108/IJLLS-11-2024-0268.

Chiu, Thomas K F. 2024. "The Impact of Generative AI (GenAI) on Practices , Policies and Research Direction in Education : A Case of ChatGPT and Midjourney" 4820. https://doi.org/10.1080/10494820.2023.2253861.

Ellis, Robert A. 2025. "The Education Leadership Challenges for Universities in a Postdigital Age." *Postdigital Science and Education* 7 (2): 430–47. https://doi.org/10.1007/s42438-024-00461-9.

Hernández-sellés, Núria, and Miguel Massigoge-galbis. 2026. "International Review of Research in Open and Distributed Learning Strengthening Policies for Education , Innovation , and Digitization Through Teacher Training : Evaluating ProFuturo ' s Open Model in Ecuador Strengthening Policies for Education , Innovat."

Jauhiainen, Jussi S, and Agustín Garagorry Guerra. 2024. "Generative AI and Education : Dynamic Personalization of Pupils ' School Learning Material with ChatGPT," no. November: 1–12. https://doi.org/10.3389/feduc.2024.1288723.

Kim, Jinhee. 2024. "Leading Teachers' Perspective on Teacher-AI Collaboration in Education." *Education and Information Technologies* 29 (7): 8693–8724. https://doi.org/10.1007/s10639-023-12109-5.

Liu, Chong, and Yun Xu. 2025. "A Visual Analysis of the Research Literature on Teachers ' Digital," no. June: 1–14. https://doi.org/10.3389/feduc.2025.1597121.

Mintasih, Diyah, and Sigit Purnama. 2024. "Integration of Digital Technology in Islamic Religious Education Learning : A Qualitative Study on Teachers ' Competence and Implementation Models in Secondary Schools" 13 (1): 85–96.

Mukkala, Pushyanthkumar Reddy, Tejaswi Vuyyuru, Banda SNV Ramana Murthy, Adapa Srinivasa Rao, and Nidal Al Said. 2025. "Integrating ICT with Artificial Intelligence for Transformative Education." Journal of Information Systems Engineering and Management 10 (10s). https://doi.org/10.52783/jisem.v10i10s.1418.

Muthanna. 2023. "Education Sciences Policy Implementation."

Sauphayana, Siriphong. 2021. "Innovation in Higher Education Management and Leadership." Journal of Educational and Social Research 11 (6): 163. https://doi.org/10.36941/jesr-2021-0137.

Schophuizen, Martine, Aodhán Kelly, Caitlin Utama, and Marcus Specht. 2023. "Enabling Educational Innovation through Complexity Leadership ? Perspectives from Four Dutch Universities." *Tertiary Education and Management*, 471–90. https://doi.org/10.1007/s11233-022-09105-8.

Siregar, H. S., Nurhamzah, M. Munir, and M. Fikri. 2025. "Enhancing Islamic Education

through Technology Integration: A Study of Teaching Practices in Indonesia." Jurnal Ilmiah Peuradeun 13 (2): 959–986. https://doi.org/10.26811/peuradeun.v13i2.1875.

Stefania Giannini. 2023. *Guidance for Generative AI in Education and Research*.

Young, Tamara, and Wayne D Lewis. 2015. "Educational Policy Implementation Revisited." https://doi.org/10.1177/0895904815568936.