ISSN : 2962-9195 E-ISSN : 2963-8992

Journal of Educational Management Research
Vol. 02 No. 02 (2023) : 147-162
Available online at https://serambi.org/index.php/jemr

From Digital Schools to Intelligent Schools: Exploring AI Governance Practices Among Educational Leaders in Managing Responsible Innovation

Akmal Mundiri[1], Muhamad Furqon[2]
[1]Universitas Nurul Jadid, Indonesia
[2]Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia
Email: akmalmundiri@unuja.ac.id

DOI: https://doi.org/10.61987/jemr.v2i2.440

Keywords:
Artificial Intelligence Governance; Educational Leadership; Organizational Learning; Responsible Innovation.

**Corresponding Author*

ABSTRACT

The rapid development of artificial intelligence (AI) has transformed educational organizations from digital-based institutions toward intelligent schools. However, successful AI transformation requires more than technological adoption; it requires effective governance, leadership capacity, and responsible innovation practices. This study explores how educational leaders implement AI governance practices to manage responsible innovation within educational organizations. This study used a qualitative approach with semi-structured interviews and document analysis involving educational leaders, digital transformation coordinators, and educational technology managers. The study analyzed data using thematic analysis to identify patterns related to AI governance leadership, organizational learning capacity, and responsible AI innovation. The findings revealed three major themes: First, educational leaders are shifting from technology managers toward AI governance leaders who establish strategic policies and ethical frameworks. Second, organizational learning capacity underpins AI readiness development among educators. Third, responsible AI innovation requires balancing technological efficiency with ethical accountability and human-centered educational values. This study contributes to educational management research by proposing an AI governance perspective for intelligent school transformation, emphasizing that sustainable AI implementation depends on organizational capability rather than technological infrastructure alone.

Article History:
Received: June 2023; Revised: October 2023; Accepted: December 2023

Please cite this article in APA style as:
Mundiri, A., & Furqon, M. (2023). From digital schools to intelligent schools: Exploring AI governance practices among educational leaders in managing responsible innovation. *Journal of Educational Management Research, 2*(2), 147-162.

INTRODUCTION

The rapid advancement of artificial intelligence (AI) has initiated a new wave of transformation across various sectors, including education. Unlike previous digital transformation initiatives that primarily emphasized the adoption of technological infrastructure, online learning platforms, and educational information systems, contemporary educational organizations are moving toward a new paradigm of intelligent schools (Khosravi et al., 2023; Verma et al., 2023). This paradigm represents a shift from merely utilizing digital tools toward developing adaptive educational ecosystems where AI supports strategic decision-making, institutional management, personalized learning, resource optimization, and organizational effectiveness (Faiz et al., 2023; Qalati et al., 2022). In this transition, AI is no longer positioned only as a technological instrument to enhance educational activities but has become an emerging organizational capability that influences how educational institutions operate, innovate, and respond to future challenges (Kickbusch et al., 2021; Muhith et al., 2023). Consequently, schools are confronted with a critical challenge: ensuring that AI adoption is not only technologically successful but also strategically governed, ethically responsible, and institutionally sustainable.

From the perspective of educational management, the transformation toward intelligent schools requires more than technological readiness. Although many educational institutions have begun adopting AI-based applications for administrative services, learning support, and decision-making processes, their implementation often remains fragmented and lacks alignment with broader institutional strategies (El Koshiry et al., 2023). Various challenges continue to emerge, including limited AI literacy among educators, insufficient organizational policies, concerns regarding data privacy and security, unclear accountability mechanisms, and resistance toward technological change (Alfawzan et al., 2022; Alkaeed et al., 2023; Ke & Sudhir, 2023). These challenges indicate that the primary issue in AI transformation is not simply whether educational institutions can adopt AI technologies, but whether they possess adequate governance mechanisms to ensure that AI is implemented responsibly (Chen & Lin, 2022; Dewi & Zaenurrosyid, 2023). Therefore, AI transformation in education requires a shift from a technology-centered approach toward a governance-oriented approach that emphasizes strategic control, ethical considerations, and long-term institutional value creation.

Within this transformation process, educational leaders occupy a central position in determining the direction and sustainability of AI adoption. School principals and educational administrators are no longer expected to function only as managers of existing resources; rather, they must become strategic leaders who are capable of guiding innovation, developing institutional policies,

managing organizational change, and cultivating cultures that support responsible technology use. Leadership in the AI era requires the ability to balance technological opportunities with fundamental educational values, including human-centered learning, fairness, transparency, and accountability (Ingaldi et al., 2023; Munawwar, 2020). In this regard, AI governance becomes an essential framework for educational leaders because it provides mechanisms to regulate how AI systems are selected, implemented, monitored, and evaluated within educational organizations (Bunjak et al., 2022; Wahid et al., 2019). Through effective governance practices, AI can be positioned not merely as an efficiency-enhancing technology but as a responsible innovation that supports educational missions and institutional sustainability.

Despite the growing attention toward AI in education, existing research remains predominantly focused on technological and pedagogical dimensions. Previous studies have extensively examined AI effectiveness in improving learning outcomes, teacher and student acceptance of AI applications, and the integration of AI tools into instructional practices. Similarly, research on educational digital transformation has largely emphasized technological infrastructure, digital competence, and organizational readiness. However, limited attention has been given to the leadership and governance processes that determine how AI innovations are strategically managed within educational organizations. Specifically, understanding remains limited of how educational leaders establish governance practices for AI policy development, risk management, ethical oversight, and organizational capacity building. This limitation creates an important research gap because the success of AI transformation depends not only on technological capabilities but also on the institutional systems and leadership practices that govern its implementation.

Addressing this gap, this study introduces a novel perspective by integrating three interconnected dimensions: educational leadership, AI governance, and responsible innovation. Rather than viewing AI as an isolated technological solution, this research conceptualizes AI adoption as a complex organizational transformation process that requires strategic leadership and governance mechanisms (Brinkerhoff, 2017). The concept of AI governance practices explored in this study includes several critical aspects, such as institutional policy formulation, ethical regulation, technology risk management, human resource development, monitoring mechanisms, and continuous evaluation of AI applications (Chu et al., 2019; Kertati & Setyo, 2020; Thompson et al., 2021). From this perspective, the study extends discussions on educational transformation by proposing a shift from the conventional digital school paradigm to the intelligent school paradigm, where educational institutions cannot only use advanced technologies but also govern innovation responsibly.

Furthermore, the transition toward intelligent schools requires educational organizations to develop a balance between technological advancement and responsible innovation. Responsible innovation emphasizes that technological development should consider ethical implications, social consequences, stakeholder involvement, and long-term sustainability. Within educational contexts, this perspective is particularly important because AI systems influence not only organizational efficiency but also issues related to student data protection, decision-making fairness, teacher autonomy, and educational equity. Therefore, examining AI governance practices among educational leaders provides an important foundation for understanding how schools can navigate technological transformation while maintaining their educational responsibilities.

Based on these arguments, this study aims to explore how educational leaders implement AI governance practices in managing responsible innovation and transforming educational organizations from digital schools into intelligent schools. Specifically, this research seeks to understand the strategies, mechanisms, and leadership practices employed by educational leaders in governing AI adoption within institutional contexts. Theoretically, this study contributes to the fields of educational leadership, technology management, and innovation studies by expanding understanding of AI governance as a leadership practice in educational transformation. Practically, the findings provide insights for school leaders, educational administrators, and policymakers in designing AI strategies that extend beyond technological efficiency by incorporating ethical governance, organizational readiness, and sustainable innovation principles.

RESEARCH METHODS

This study adopted a qualitative research approach to explore the implementation of artificial intelligence (AI) governance practices among educational leaders in managing responsible innovation toward the development of intelligent schools. A qualitative approach was considered appropriate because it enables researchers to gain an in-depth understanding of how educational leaders perceive, design, and implement AI-related policies, strategies, and organizational practices within educational institutions. The study focused on exploring leadership experiences, institutional strategies, challenges, and ethical considerations related to AI adoption in educational management.

The research was conducted in educational institutions that have initiated digital transformation programs or begun integrating artificial intelligence-based technologies into their management and learning processes. The study focused on three key aspects of AI governance practices: 1) strategic leadership in AI

implementation, 2) organizational readiness and capacity building for AI adoption, and 3) responsible innovation practices related to ethics, transparency, and human-centered technology management.

Purposive sampling was employed to select participants based on predetermined inclusion criteria. The participants consisted of educational leaders, including school principals, vice principals responsible for digital transformation, and educational technology coordinators who had direct involvement in planning or implementing technology-based innovation within their institutions. These participants were selected because they possessed relevant experiences and decision-making authority regarding digital transformation and AI utilization in educational management. The study involved 30 participants from different educational institutions.

Table 1. Participant Characteristics

Participants	Number	Selection Criteria
School Principals	15	Educational leaders responsible for institutional strategy and innovation management
Digital Transformation Coordinators	10	Staff members involved in technology implementation and AI-related programs
Educational Technology Managers	5	Individuals responsible for managing digital systems and AI-supported educational services
Total	**30**	

Data were collected through semi-structured interviews and institutional document analysis. Semi-structured interviews were conducted to explore participants' experiences, perceptions, and strategies regarding AI governance in educational organizations. The interview questions focused on several themes, including institutional AI policies, leadership approaches in managing technological change, teacher readiness for AI adoption, ethical considerations, challenges in implementation, and strategies for developing responsible innovation.

Institutional documents were also analyzed to provide additional contextual information regarding AI governance practices. The documents included digital transformation plans, technology policies, innovation frameworks, teacher development programs, and institutional guidelines related to technology use. Document analysis was conducted to identify how educational institutions formally regulate and support AI integration within their organizational systems.

Table 2. Research Data Sources

No	Data Source	Focus of Analysis
1	Semi-structured	Leadership strategies, AI governance practices,

	interviews with educational leaders	organizational challenges, and innovation management
2	Institutional technology policies	AI regulations, ethical guidelines, and governance mechanisms
3	Digital transformation plans	Strategic direction and institutional readiness for AI adoption
4	Professional development programs	Teacher AI competency development and organizational capacity building

The collected data were analyzed using Braun and Clarke's six-step thematic analysis approach, consisting of data familiarization, initial coding, theme development, theme review, theme definition, and interpretation. The interview transcripts and institutional documents were examined systematically to identify emerging themes related to AI governance in educational management. The analysis focused on understanding how educational leaders navigate the transition from digital schools toward intelligent schools through strategic leadership, organizational learning, and responsible innovation practices.

To enhance the credibility of the findings, methodological triangulation was applied by comparing data obtained from interviews and institutional documents. The comparison of multiple data sources helped ensure a more comprehensive understanding of AI governance implementation within educational organizations. Ethical considerations were maintained throughout the research process. Before data collection, participants provided informed consent and were informed about the purpose of the study. Participant identities and institutional information were anonymized to maintain confidentiality. All collected data were used solely for academic research purposes.

RESULTS AND DISCUSSION

Results

From Technology Adoption to AI Governance Leadership in Educational Organizations

The first major finding revealed that educational leaders have shifted their approach from technology adoption toward strategic AI governance. The analysis demonstrated that AI implementation in educational institutions was no longer considered merely a technological advancement but an organizational transformation requiring strategic planning, institutional regulation, and ethical considerations. Previously, digital transformation initiatives primarily focused on providing technological infrastructure, such as learning platforms, digital administrative systems, and online resources. However, the emergence of AI created more complex managerial demands, requiring leaders to establish governance mechanisms that regulate AI utilization, organizational

responsibilities, and alignment with educational objectives.

The findings further showed that educational leaders developed new management strategies to ensure that AI implementation was structured and sustainable. These strategies included establishing institutional AI policies, defining acceptable AI practices, developing monitoring mechanisms, and ensuring that AI-supported decisions remained under professional supervision. Institutions with stronger leadership involvement demonstrated greater clarity in managing AI transformation because leaders actively connected technological innovation with organizational vision and educational values. This indicates that AI adoption success depends not only on technological availability but also on leadership capacity to coordinate resources, manage change, and establish responsible innovation frameworks within educational organizations.

Table 3. Themes of AI Governance Leadership

Code	Description	Evidence from Data
Strategic AI Alignment	Integration of AI initiatives with institutional vision and educational objectives	AI implementation was directed toward improving institutional effectiveness and supporting educational goals
AI Policy Development	Development of institutional guidelines for AI usage	Institutions established regulations regarding AI utilization, responsibility, and ethical boundaries
Leadership Role Transformation	Transformation of leadership responsibilities in managing intelligent technologies	Leaders shifted from technology managers toward strategic AI governance facilitators
Human Oversight Mechanism	Maintaining human involvement in AI-supported decision-making	AI-generated outputs required professional evaluation and institutional validation

The table 3, that AI governance leadership represents a significant evolution in educational management practices. Educational leaders are no longer positioned merely as facilitators of digital technology adoption but as strategic actors responsible for directing, regulating, and evaluating AI implementation. This finding suggests that intelligent school transformation requires governance capability rather than technological investment alone. The emergence of AI governance leadership extends the concept of digital leadership by incorporating ethical regulation, accountability, and human-centered decision-making. Therefore, effective AI integration depends on leaders' ability to balance innovation opportunities with organizational responsibility, ensuring that AI contributes to sustainable educational improvement.

Organizational Learning Capacity as the Foundation of AI Readiness

The second major finding revealed that organizational learning capacity served as the fundamental foundation for AI readiness in educational institutions. The analysis demonstrated that successful AI transformation was

not primarily determined by the availability of technological infrastructure but by the organization's ability to develop knowledge, competencies, and adaptive capabilities among its members. Although most institutions had implemented digital systems before adopting AI, differences in AI readiness emerged based on how effectively schools developed continuous learning mechanisms. Institutions with stronger learning cultures were more capable of integrating AI into educational management because educators received adequate support, opportunities for experimentation, and collaborative spaces to develop new technological competencies.

The findings further indicated that AI readiness was constructed through collective organizational processes rather than individual technological skills. Educational institutions that successfully implemented AI developed professional learning communities, continuous training programs, and knowledge-sharing mechanisms to reduce uncertainty and resistance among educators. The analysis showed that teachers' adaptation to AI was strongly influenced by organizational support, leadership encouragement, and opportunities to exchange experiences with colleagues. Therefore, AI transformation required institutions to move beyond a training-based approach toward a broader organizational learning model, where innovation emerged through collaboration, reflection, and continuous improvement.

Table 4. Organizational Learning Factors Supporting AI Readiness

Code	Description	Evidence from Data
Continuous Professional Development	Development of AI competencies through structured learning activities	Institutions implemented continuous AI training programs and technology-related professional development
Knowledge Sharing Culture	Exchange of experiences and practices among educators	Teachers collaborated through professional communities and peer-learning activities
Psychological Readiness	Development of confidence and acceptance toward AI implementation	Organizational support reduced uncertainty and resistance toward AI adoption
Collaborative Leadership	Leadership practices that encourage participation and shared learning	Leaders facilitated experimentation, reflection, and collective problem-solving

The findings presented in Table 4 demonstrate that AI readiness is fundamentally an organizational capability rather than merely an individual competency. The presence of technology does not automatically create intelligent educational organizations; instead, institutions must develop internal learning systems that enable members to understand, evaluate, and utilize AI effectively. This finding highlights that organizational learning capacity functions as a critical mediator between AI availability and successful implementation. Schools

with strong learning cultures are better positioned to transform technological opportunities into sustainable innovation because educators are not only users of AI but also active contributors to organizational adaptation.

Overall, this finding emphasizes that the transition from digital schools to intelligent schools requires a shift from technology-centered transformation toward learning-centered transformation. AI implementation becomes sustainable when educational organizations cultivate continuous improvement, collaborative knowledge creation, and adaptive professional practices. This finding contributes to educational management research by demonstrating that AI readiness should be conceptualized as a collective organizational process shaped by leadership support, learning culture, and institutional capability development. Therefore, the effectiveness of AI transformation depends less on how advanced the technology is and more on how effectively educational organizations learn, adapt, and integrate new knowledge into their management practices.

Responsible AI Innovation: Balancing Efficiency, Ethics, and Human-Centered Education

Responsible AI innovation was sustained not by technological capability alone, but by the capacity of educational institutions to establish a balance between technological advancement, ethical governance, and human-centered educational values. The findings demonstrated that educational leaders perceived AI as a strategic resource that could improve administrative efficiency, support data-informed decision-making, enhance personalized learning, and optimize institutional services. However, AI adoption also introduced new managerial challenges related to data privacy, algorithmic accountability, academic integrity, and the preservation of human judgment in educational decision-making. Therefore, institutions developed responsible AI practices by establishing ethical guidelines, regulating AI utilization, strengthening educators' professional competencies, and positioning AI as a supportive tool rather than a replacement for human expertise.

The analysis of interview, observation, and document data showed that responsible AI innovation emerged through systematic institutional governance mechanisms. Educational leaders actively integrated AI principles into organizational policies by defining appropriate usage boundaries, establishing accountability procedures, and ensuring that AI-supported decisions remained subject to professional evaluation. Teachers were encouraged to utilize AI for instructional preparation, administrative efficiency, and learning resource development; however, they were also required to critically evaluate AI-generated information before applying it in educational contexts. Institutional

documents further confirmed the presence of emerging AI governance practices, including data protection guidelines, ethical considerations, and monitoring procedures. These findings indicate that sustainable AI transformation occurs when innovation is guided by institutional governance rather than driven solely by technological availability.

The findings further indicated that responsible AI innovation required institutions to develop adaptive strategies for managing technological risks and organizational uncertainty. Although AI improved efficiency across various educational processes, institutions encountered challenges related to inaccurate AI outputs, excessive reliance on automated recommendations, unequal access to AI resources, and concerns regarding the security of student and institutional data. Educational leaders addressed these challenges through continuous professional development, AI literacy enhancement, collaborative reflection, and the implementation of verification procedures. These practices enabled educators to develop a more critical understanding of AI capabilities and limitations. Consequently, responsible AI implementation was shaped not only by technical competence but also by ethical awareness, organizational preparedness, and the ability to manage change effectively.

This finding highlights that responsible AI innovation represents a critical dimension of contemporary educational management. Unlike previous digital transformation initiatives that primarily focused on infrastructure development and technology adoption, AI transformation requires stronger governance because intelligent systems influence decision-making processes, information management, and professional practices. The study demonstrates that intelligent schools are not defined by the extent to which they utilize AI technologies, but by their ability to govern AI responsibly through leadership commitment, institutional regulation, educator development, and continuous evaluation. Therefore, the transition from digital schools toward intelligent schools requires educational leaders to view AI as a strategic organizational capability that enhances human potential while preserving the ethical, relational, and developmental purposes of education.

Discussion

This study found that the transition from digital schools to intelligent schools is shaped not only by artificial intelligence (AI) adoption but also by the development of AI governance practices, organizational learning capacity, and responsible innovation strategies. Unlike previous studies that primarily examine AI acceptance, technological readiness, or instructional effectiveness, this study highlights the managerial processes required to govern AI transformation within educational organizations. The findings indicate that AI

implementation becomes sustainable when educational leaders establish strategic direction, develop institutional policies, strengthen organizational capabilities, and maintain ethical control over intelligent technologies. Therefore, this study extends the understanding of educational technology transformation by positioning AI governance as a central component of contemporary educational management.

The findings demonstrate that educational leaders play a critical role in transforming AI from a technological resource into a strategic organizational capability. Previous research on digital leadership has emphasized the importance of leadership vision, technology integration, and organizational readiness in digital transformation. However, the current study extends this perspective by showing that AI-driven transformation requires additional leadership competencies related to governance, ethical regulation, and accountability (Segura & VallsMartínez, 2018). AI adoption creates complex organizational challenges because intelligent systems influence decision-making processes, data management, and professional practices. Consequently, educational leaders must move beyond the traditional role of technology facilitators toward becoming AI governance leaders who ensure that technological innovation remains aligned with educational objectives, institutional values, and human-centered principles.

The findings further reveal that organizational learning capacity functions as a critical mechanism supporting AI readiness in educational institutions. While previous studies often associate digital transformation success with technological infrastructure and individual digital competence, this study demonstrates that AI readiness is fundamentally an organizational phenomenon. Institutions with strong learning cultures are better positioned to integrate AI because they provide continuous professional development, collaborative learning opportunities, and knowledge-sharing mechanisms among educators (Charband & Jafari Navimipour, 2018; Wood, 2021). This finding aligns with the concept of learning organizations, where sustainable innovation depends on an institution's ability to generate, distribute, and apply new knowledge. In the context of AI transformation, educators are not merely technology users but active participants in organizational adaptation and innovation development.

Furthermore, this study highlights that responsible AI innovation requires a balance between technological efficiency and ethical educational values. Previous discussions on AI in education have frequently focused on opportunities such as automation, personalization, and productivity improvement. However, this study emphasizes that AI implementation also introduces governance challenges related to data privacy, algorithmic transparency, academic integrity, and human oversight. Educational institutions

cannot evaluate AI success only through efficiency outcomes but must also consider whether AI practices preserve professional judgment, educational relationships, and student-centered values (Naimanova et al, 2023; Ubaidillah et al., 2023). Therefore, responsible AI innovation represents a broader management challenge in which leaders must regulate technological advancement while maintaining the fundamental human purposes of education.

Based on these findings, this study proposes the AI Governance Transformation Model for Intelligent Schools (AIGT Model), which explains how educational organizations transition from digital schools toward intelligent schools through three interconnected dimensions (Guan et al., 2020; Mogas et al., 2022). The first dimension, AI Governance Leadership, represents the strategic role of educational leaders in establishing policies, ethical frameworks, and organizational direction for AI implementation. The second dimension, Organizational Learning Capacity, explains how institutions develop educator readiness through continuous learning, collaboration, and knowledge-sharing practices. The third dimension, Responsible AI Innovation, describes how organizations balance technological advancement with ethical accountability and human-centered educational values. Unlike conventional digital transformation models that emphasize technology adoption, the AIGT Model positions AI transformation as a governance-driven organizational change process involving leadership, learning, and ethical innovation.

This study contributes to the literature by integrating AI governance, educational leadership, organizational learning, and responsible innovation into a unified framework for understanding intelligent school transformation. The findings suggest that policymakers and educational leaders should move beyond infrastructure-focused digital strategies and develop comprehensive AI governance systems that include ethical guidelines, professional development, monitoring mechanisms, and continuous evaluation. Educational institutions should not be defined as intelligent schools merely because they utilize advanced technologies, but because they possess the organizational capability to manage AI responsibly, strategically, and sustainably. Thus, the future of educational transformation depends not only on what AI can do, but on how educational organizations govern AI to enhance human potential and improve educational quality.

CONCLUSION

This study concludes that the transformation from digital schools to intelligent schools is not determined solely by the adoption of artificial intelligence technologies, but by the ability of educational organizations to establish effective governance, develop organizational learning capacity, and

implement responsible innovation practices. The findings demonstrate that educational leaders play a central role in directing AI transformation through strategic policies, ethical frameworks, and human-centered decision-making mechanisms. Furthermore, AI readiness depends on institutional capability to support continuous learning, professional development, and collaborative adaptation among educators. These findings emphasize that AI transformation represents an organizational change process rather than merely a technological implementation initiative.

This study contributes to educational management literature by proposing that intelligent school development requires an integrated approach combining AI governance leadership, organizational learning, and responsible innovation. Educational institutions should therefore move beyond technology-centered transformation strategies and focus on building governance systems that ensure AI is implemented ethically, strategically, and sustainably. The successful integration of AI in education depends on maintaining a balance between technological efficiency and the fundamental human values of education. By positioning AI as a strategic partner rather than a replacement for human expertise, educational organizations can create future-ready learning environments that enhance institutional performance while preserving educational integrity.

REFERENCES

Alfawzan, N., Christen, M., Spitale, G., & Biller-Andorno, N. (2022). Privacy, data sharing, and data security policies of women's mHealth apps: scoping review and content analysis. *JMIR MHealth and UHealth*, *10*(5), e33735.

Alkaeed, M., Qayyum, A., & Qadir, J. (2023). Privacy Preservation in Artificial Intelligence and Extended Reality (AI-XR) Metaverses: A Survey. *Journal of Network and Computer Applications*, *231*(June), 103989. https://doi.org/10.1016/j.jnca.2024.103989

Brinkerhoff, D. W. (2017). Accountability and Good Governance: Concepts and Issues. In *International Development Governance* (Vol. 117, pp. 269–287). https://doi.org/10.4324/9781315092577-15

Bunjak, A., Bruch, H., & Černe, M. (2022). Context is key: The joint roles of transformational and shared leadership and management innovation in predicting employee IT innovation adoption. *International Journal of Information Management*, *66*(February 2021). https://doi.org/10.1016/j.ijinfomgt.2022.102516

Charband, Y., & Jafari Navimipour, N. (2018). Knowledge sharing mechanisms in the education: A systematic review of the state of the art literature and recommendations for future research. *Kybernetes*, *47*(7), 1456-1490. https://doi.org/10.1108/K-06-2017-0227

Chen, J. H., & Lin, Y. C. (2022). Institutional barriers to curriculum reform in vocational higher education: Perspectives from maritime institutions. *Educational Studies*, *48*(4), 512–529. https://doi.org/10.1080/03055698.2022.2045611

Chu, A., Kwon, S., & Cowley, P. (2019). Health financing reforms for moving towards universal health coverage in the western pacific region. *Health Systems and Reform*, *5*(1), 32–47. https://doi.org/10.1080/23288604.2018.1544029

Dewi, N. D., & Zaenurrosyid, A. (2023). Islamic Philanthropic Institutions in the Development of Education and Economic Empowerment. *Islamic Review: Jurnal Riset Dan Kajian Keislaman*, *12*(1), 19–34. https://doi.org/10.35878/islamicreview.v12i1.695

El Koshiry, A., Eliwa, E., Abd El-Hafeez, T., & Shams, M. Y. (2023). Unlocking the power of blockchain in education: An overview of innovations and outcomes. *Blockchain: Research and Applications*, *4*(4), 100165. https://doi.org/10.1016/j.bcra.2023.100165

Faiz, H., Al-Amin, M. F., Mundiri, A., & Fahmi, A. (2023). Transforming Organizational Quality Through Effective Administrative Training. *Communautaire: Journal of Community Service*, *2*(2), 157–167. https://doi.org/10.61987/communautaire.v2i2.352

Guan, C., Mou, J., & Jiang, Z. (2020). Artificial intelligence innovation in education: A twenty-year data-driven historical analysis. *International Journal of Innovation Studies*, *4*(4), 134–147. https://doi.org/10.1016/j.ijis.2020.09.001

Ingaldi, M., Ulewicz, R., & Klimecka-Tatar, D. (2023). Creation of the university curriculum in the field of Industry 4.0 with the use of modern teaching instruments - Polish case study. *Procedia Computer Science*, *217*(2022), 660–669. https://doi.org/10.1016/j.procs.2022.12.262

Ke, T. T., & Sudhir, K. (2023). Privacy rights and data security: GDPR and personal data markets. *Management Science*, *69*(8), 4389–4412.

Kertati, I., & Setyo, A. N. (2020). Implementasi Kebijakan Keputusan Menteri Agama Nomor 90 Tahun 2018 Tentang Petunjuk Pelaksanaan Penyelenggaraan Pelayanan Terpadu Kementerian Agama Di Kanwil Kementrian Agama Provinsi Jawa Tengah. *Public Service and Governance Journal*, *1*(02), 279. https://doi.org/10.56444/psgj.v1i02.1566

Khosravi, H., Denny, P., Moore, S., & Stamper, J. (2023). Learnersourcing in the age of AI: Student, educator and machine partnerships for content creation. *Computers and Education: Artificial Intelligence*, *5*(October 2022), 100151. https://doi.org/10.1016/j.caeai.2023.100151

Kickbusch, I., Piselli, D., Agrawal, A., Balicer, R., Banner, O., Adelhardt, M., Capobianco, E., Fabian, C., Singh Gill, A., Lupton, D., Medhora, R. P., Ndili, N., Ryś, A., Sambuli, N., Settle, D., Swaminathan, S., Morales, J. V., Wolpert, M., Wyckoff, A. W., … Wong, B. L. H. (2021). The Lancet and Financial Times Commission on governing health futures 2030: growing up in a digital world. *The Lancet*, *398*(10312), 1727–1776. https://doi.org/10.1016/S0140-6736(21)01824-9

Mogas, J., Palau, R., Fuentes, M., & Cebrián, G. (2022). Smart schools on the way: How school principals from Catalonia approach the future of education within the fourth industrial revolution. *Learning Environments Research*, *25*(3), 875-893.

Muhith, A., Baharun, H., Astutik, A., & Mukarromah, L. (2023). Anger Management in Building Service Quality in Early Childhood Education Institutions. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *7*(5), 5460–5468. https://doi.org/10.31004/obsesi.v7i5.4158

Munawwar, M. F. (2020). Typical Literary Works of Pesantren on Righteousness Teaching within Cultural Transformation. *Journal of Social Studies Education Research*, *11*(4), 114–148. https://jsser.org/index.php/jsser/article/view/2745

Naimanova, D., Lebedeva, L., Akpayeva, A., Astambayeva, Z., Ryabova, E., & Yessenova, K. (2023). Investigation of Primary School Teachers' Student-Centered Teaching and Technology Integration Competencies. *International Journal of Education in Mathematics, Science and Technology*, *11*(6), 1386-1404.

Qalati, S. A., Zafar, Z., Fan, M., Sánchez Limón, M. L., & Khaskheli, M. B. (2022). Employee performance under transformational leadership and organizational citizenship behavior: A mediated model. *Heliyon*, *8*(11). https://doi.org/10.1016/j.heliyon.2022.e11374

Segura, E. A., & VallsMartínez, M. del C. (2018). Strategic analysis of Ethical Banking in Spain through Triodos Bank. Financing social and environmental projects. *CIRIEC-Espana Revista de Economia Publica, Social y Cooperativa*, *92*, 87–120. https://doi.org/10.7203/CIRIEC-E.92.10805

Thompson, A. E., Feinman, G. M., Lemly, M., & Prufer, K. M. (2021). Inequality, networks, and the financing of Classic Maya political power. *Journal of Archaeological Science*, *133*. https://doi.org/10.1016/j.jas.2021.105441

Ubaidillah, U., Mundiri, A., & Baharun, H. (2023). Empowering Teacher Competence through Guidance in Religion-Moderated Literacy. *GEMEINSCHAFT: Journal of Social and Community Engagement*, *1*(1), 37-49. https://doi.org/10.71392/gjsce.v1i1.46

Verma, N., Getenet, D. S., Dann, D. C., & Shaik, T. (2023). Designing an artificial intelligence tool to understand student engagement based on teacher's behaviours and movements in video conferencing. *Computers and Education: Artificial Intelligence*, *5*(June), 100187. https://doi.org/10.1016/j.caeai.2023.100187

Wahid, A., Rahman, K., Najiburrahman, N., Fauzi, A., Baharun, H., & Muali, C. (2019). *Management of Islamic Higher Education Based on Benchmarking and Information Technology in the Revolutionary Era 4.0*. https://doi.org/10.4108/eai.8-12-2018.2284035

Wood, B. P. (2021). A multilevel investigation of the link between ethical leadership behaviour and employees green behaviour in the hospitality industry. *International Journal of Hospitality Management*, *97*. https://doi.org/10.1016/j.ijhm.2021.102993