

Artificial Intelligence in Educational Management: Opportunities, Challenges, and Future Directions

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HOW TO CITE:

Tan Qian, Peng Ying,
Wenyuan Han, Piyapun
Santaveesuk. (2026) Artificial
Intelligence in Educational
Management: Opportunities,
Challenges, and Future
Directions
International Journal of Special
Education, 41(19s), 1239-1253

ABSTRACT:

Artificial Intelligence (AI) is rapidly transforming educational management from its traditional role of supporting teaching and learning into a strategic instrument for organizational planning, data analytics, resource management, and executive decision-making. Nevertheless, recent advances in Generative Artificial Intelligence (Generative AI) and Agentic Artificial Intelligence (Agentic AI) have introduced significant challenges related to governance, transparency, accountability, fairness, and personal data protection. These issues have not yet been systematically integrated into existing educational management frameworks.

This article aims to (1) synthesize the body of knowledge concerning the role of artificial intelligence in educational management, (2) analyze the opportunities and challenges associated with AI adoption in educational organizations, and (3) develop the Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework). The study adopts a conceptual research approach by synthesizing evidence from scholarly literature, international policy reports, and global standards on AI governance and educational management.

The conceptual synthesis identifies six interrelated dimensions that constitute sustainable educational management in the AI era: (1) AI Strategic Leadership, (2) Responsible AI Governance, (3) AI-Driven Decision Intelligence, (4) Human-AI Collaborative Intelligence, (5) AI Competency Development, and (6) Sustainable Educational Value Creation. These six dimensions function as an integrated system that collectively promotes effective, transparent, accountable, and sustainable educational management.

The study argues that successful AI implementation depends not solely on technological advancement but on educational institutions' capacity to balance innovation, technology, human capability, and governance within the principles of sustainable development. Furthermore, the proposed AIGEM Framework aligns with Sustainable Development Goal (SDG) 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 16

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(Peace, Justice and Strong Institutions). Consequently, the framework provides a practical and theoretical reference for educational leaders, policymakers, and researchers seeking to develop intelligent and sustainable educational institutions in the age of artificial intelligence.

Keywords: Artificial Intelligence; Educational Management; AI Governance; Responsible AI; Sustainable Development; Intelligent Educational Institutions

Introduction

Over the past decade, rapid advances in digital technologies have accelerated organizational transformation across educational institutions worldwide. This transformation has become particularly significant following the emergence of Generative Artificial Intelligence (Generative AI), which has dramatically expanded AI's capabilities in generating content, analyzing complex datasets, synthesizing knowledge, and supporting strategic decision-making (Dwivedi et al., 2023; UNESCO, 2023). Consequently, artificial intelligence is no longer viewed merely as an instructional technology but has evolved into a strategic infrastructure supporting institutional governance and educational management.

Today, AI is increasingly applied across a wide range of administrative functions, including student enrollment forecasting, academic performance analytics, human resource management, budget allocation, institutional quality assurance, research administration, and executive decision support (Holmes et al., 2022). These capabilities enhance organizational efficiency, reduce routine administrative workloads, and strengthen data-driven management, which has become a defining characteristic of educational leadership in the twenty-first century.

Despite these opportunities, the rapid expansion of AI has generated important governance concerns. AI systems increasingly influence

decisions involving student rights, educational equity, and the allocation of public resources. Without appropriate governance mechanisms, AI may introduce algorithmic bias, opaque decision-making processes, privacy violations, and excessive reliance on automated systems that

diminish human judgment and institutional accountability (Floridi et al., 2018; UNESCO, 2021).

Recognizing these challenges, several international organizations have introduced principles and standards for responsible AI governance. These include the OECD Principles on Artificial Intelligence (OECD, 2019), the UNESCO Recommendation on the Ethics of Artificial Intelligence (UNESCO, 2021), ISO/IEC 42001 Artificial Intelligence Management Systems, and the NIST Artificial Intelligence Risk Management Framework (AI RMF). Collectively, these initiatives emphasize transparency, accountability, fairness, security, privacy protection, and meaningful human oversight as fundamental requirements for trustworthy AI. However, these principles have not yet been systematically translated into an integrated educational management framework suitable for educational institutions.

A review of the existing literature further reveals that most studies continue to focus primarily on AI applications for teaching and learning, such as Intelligent Tutoring Systems, Adaptive Learning, and Learning

Analytics. Comparatively limited attention has been devoted to AI's role in institutional governance, strategic leadership, organizational decision-making, and educational management (Zawacki-Richter et al., 2019). Moreover, existing conceptual frameworks generally treat AI as a technological resource rather than as an organizational capability requiring strategic leadership, governance structures, and institutional accountability.

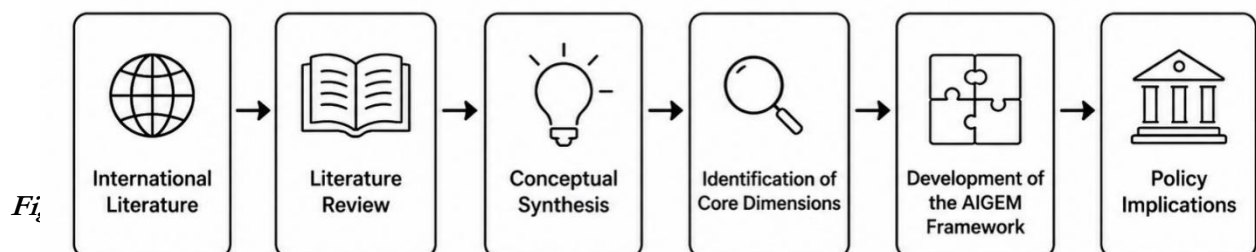
These limitations highlight the need for a comprehensive conceptual framework capable of integrating AI leadership, governance, intelligent decision-making, human–AI collaboration, competency development, and sustainable educational value into a unified model. Such integration is essential for guiding educational institutions through AI-driven organizational transformation while maintaining ethical responsibility and long-term sustainability.

Accordingly, this article aims to develop

the Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework) by synthesizing contemporary literature, international policy documents, and globally recognized governance standards. The proposed framework seeks to explain the fundamental dimensions and relationships underlying AI-enabled educational management while providing policy recommendations for developing intelligent, transparent, accountable, and sustainable educational institutions.

Table 1. Synthesis of Knowledge Gaps and the Development Direction of the AIGEM Framework

Research Area	Findings from Previous Studies	Knowledge Gap	Contribution of This Study
AI in Education	Focuses primarily on teaching and learning	Limited attention to institutional management	AI for Educational Management
AI Governance	Emphasizes ethical principles	Lack of governance frameworks for educational institutions	Responsible AI Governance
Educational Leadership	Addresses digital leadership	Limited integration of AI and leadership	AI Strategic Leadership
Decision Support	Focuses on Learning Analytics	Limited discussion of Decision Intelligence	AI-Driven Decision Intelligence
Sustainability	Refers to the SDGs	Weak integration of AI and sustainable educational value	Sustainable Educational Value Creation



2. Literature Review

2.1 Artificial Intelligence in

Educational Management

Artificial intelligence (AI) has evolved from a technology supporting teaching and

learning to a strategic capability for educational management. Recent advances in Generative AI enable educational institutions to improve strategic planning, quality assurance, resource allocation, and institutional decision-making through predictive analytics and intelligent data processing (Holmes et al., 2022; Dwivedi et al., 2023). However, successful AI implementation depends not only on technology but also on leadership, organizational readiness, and governance (Vial, 2019).

2.2 Responsible AI Governance

The increasing use of AI in educational management has made governance a

strategic priority. Responsible AI governance emphasizes transparency, accountability, fairness, privacy protection, and human oversight to ensure that AI supports educational values and institutional trust (OECD, 2019; UNESCO, 2021). International initiatives, including the OECD AI Principles, UNESCO Recommendation on the Ethics of Artificial Intelligence, ISO/IEC 42001, and the NIST AI Risk Management Framework, provide key principles for trustworthy AI implementation in educational organizations.

2.3 Human–AI Collaborative Intelligence

Rather than replacing educational professionals, AI increasingly functions as an

intelligent partner that complements human expertise. AI contributes computational capability and predictive analytics, whereas humans provide ethical judgment, contextual understanding, creativity, and strategic leadership (Shneiderman, 2022). Effective educational management therefore depends on collaborative intelligence in which AI supports evidence-based decisions while humans retain responsibility for strategic and ethical decision-making.

2.4 Artificial Intelligence and Sustainable Educational Management

AI should contribute not only to organizational efficiency but also to sustainable

educational development. Responsible AI can enhance educational quality, institutional innovation, and evidence-based governance while supporting SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 16 (Peace, Justice and Strong Institutions). Nevertheless, sustainable implementation requires balancing technological innovation with ethical governance, equity, and human-centered values.

Table 2. Synthesis of Previous Studies and Conceptual Foundations for the AIGEM Framework

Knowledge Domain	Major Contribution	Research Gap	Contribution of AIGEM
AI in Education	AI enhances teaching and management	Limited organizational perspective	AI for Educational Management
AI Governance	Focus on ethics and regulation	Limited educational application	Responsible AI Governance
Educational Leadership	Digital leadership	Weak integration with AI	AI Strategic Leadership
Human–AI Collaboration	AI complements human expertise	Limited governance perspective	Human–AI Collaborative Intelligence

Knowledge Domain	Major Contribution	Research Gap	Contribution of AIGEM
Sustainable Development	AI supports the SDGs	Limited integration with educational management	Sustainable Educational Value Creation

The literature indicates that previous studies have extensively examined AI in teaching, governance, and digital transformation; however, these perspectives remain fragmented. Strategic leadership, AI governance, intelligent decision-making, human–AI collaboration, and sustainability have generally been investigated independently, limiting a comprehensive understanding of AI-enabled educational management. To address this gap, this study proposes the Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework), integrating six interrelated dimensions into a unified conceptual model for guiding educational management in the era of artificial intelligence.

3. Research Methodology

This study employed a conceptual research design to develop a comprehensive framework for artificial intelligence governance in educational management. Conceptual research is particularly appropriate for emerging research domains where existing knowledge remains fragmented and a new theoretical perspective is required (Jaakkola, 2020). Rather than collecting empirical data, this study synthesized existing theoretical and policy-oriented knowledge to construct a conceptual framework capable of explaining sustainable educational management in the era of artificial intelligence.

The conceptual synthesis drew upon peer-reviewed journal articles, international policy reports, and professional standards related to

artificial intelligence, educational leadership, digital transformation, AI governance, and sustainable development. Priority was given to publications indexed in Scopus and Web of Science, together with policy documents issued by UNESCO, OECD, the European Commission, ISO, and the National Institute of Standards and Technology (NIST). These sources were selected because they represent internationally recognized references for responsible AI and educational governance.

The framework development followed four sequential stages. First, relevant literature was identified and reviewed to establish the theoretical foundations of AI in educational management. Second, key concepts were classified into common thematic categories. Third, overlapping concepts were synthesized to identify shared organizational capabilities and governance principles. Finally, the synthesized constructs were integrated into the proposed Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework).

Unlike traditional literature reviews that summarize previous findings, the conceptual synthesis emphasized identifying relationships among concepts and developing a coherent explanatory framework. The resulting model therefore represents a higher-order theoretical integration rather than a simple aggregation of existing knowledge.

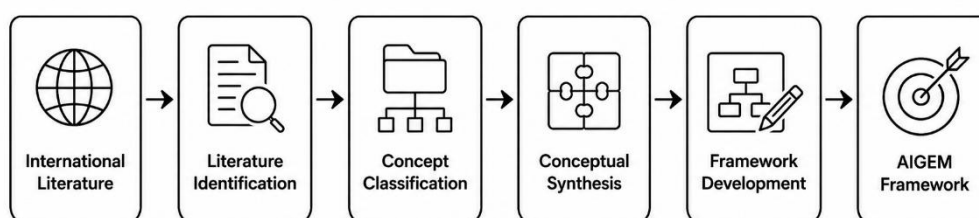


Figure 2. Research Process for Developing the AIGEM Framework

Table 3. Conceptual Synthesis Process

Stage	Objective	Expected Output
Literature Identification	Review international literature and policy documents	Knowledge base
Concept Classification	Group similar concepts	Major conceptual domains
Conceptual Synthesis	Identify common organizational capabilities	Core framework dimensions
Framework Development	Integrate synthesized concepts	AIGEM Framework

4. Results: Development of the Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework)

The conceptual synthesis resulted in the development of the Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework), which explains how educational institutions can strategically integrate artificial intelligence while maintaining responsible governance, organizational resilience, and sustainable educational development.

Unlike previous frameworks that primarily emphasize technological adoption or digital transformation, the AIGEM Framework conceptualizes artificial intelligence as an organizational capability that requires strategic leadership, governance mechanisms, intelligent decision-making, collaborative intelligence, competency development, and sustainable value creation. These six dimensions are not

independent; rather, they interact systematically to strengthen institutional performance and long-term sustainability.

The framework proposes a sequential relationship among the six dimensions. AI Strategic Leadership provides the strategic vision and organizational commitment necessary for AI adoption. Leadership subsequently establishes Responsible AI Governance, ensuring that AI systems operate according to principles of transparency, accountability, fairness, and human oversight. Effective governance creates the institutional conditions for AI-Driven Decision Intelligence, allowing organizations to transform educational data into strategic insights that support evidence-based management.

Decision intelligence further enables Human–AI Collaborative Intelligence, where AI complements rather than replaces the expertise of educational professionals. Such collaboration encourages the development of AI Competency Development,

equipping educational leaders, faculty members, and staff with the knowledge and skills required to operate effectively in AI-enabled organizations. Ultimately, these interconnected capabilities contribute to Sustainable Educational Value Creation, reflected in improved educational quality, organizational resilience, innovation capacity, stakeholder trust, and alignment with the Sustainable Development Goals.

4.1 AI Strategic Leadership

AI Strategic Leadership represents the foundational dimension of the AIGEM

Framework. Successful AI implementation begins with leadership capable of articulating a clear strategic vision, aligning AI initiatives with institutional missions, allocating appropriate resources, and fostering an organizational culture that embraces innovation while maintaining educational values.

Rather than viewing AI as a technological project, strategic leaders recognize AI

as a long-term organizational capability. They are responsible for balancing technological opportunities with institutional priorities, ensuring that AI contributes to educational quality, operational effectiveness, and sustainable development. Consequently, AI Strategic Leadership functions as the driving force that initiates organizational transformation and coordinates all subsequent dimensions of the

framework.

4.2 Responsible AI Governance

Responsible AI Governance constitutes the central coordinating mechanism of the

framework. This dimension establishes institutional policies, ethical guidelines, governance structures, and accountability mechanisms to ensure that AI systems are implemented responsibly.

The synthesis indicates that responsible governance should encompass six

interrelated principles: transparency, accountability, fairness, privacy protection, cybersecurity, and human oversight. These principles are consistent with international guidance from UNESCO (2021), OECD (2019), the NIST AI Risk Management Framework, and ISO/IEC 42001. Collectively, they provide educational institutions with a governance architecture that promotes trust, reduces organizational risk, and supports responsible innovation.

Rather than functioning solely as a compliance mechanism, Responsible AI

Governance is conceptualized as a strategic organizational capability that strengthens institutional legitimacy and enables sustainable AI adoption.

Table 4. Dimensions of the AIGEM Framework

Dimension	Primary Role	Expected Institutional Outcome
AI Strategic Leadership	Strategic vision and organizational transformation	Institutional readiness
Responsible AI Governance	Ethical and accountable AI implementation	Trustworthy governance
AI-Driven Decision Intelligence	Evidence-based strategic decision-making	Organizational effectiveness
Human-AI Collaborative Intelligence	Integration of human expertise and AI capability	Improved decision quality

Dimension	Primary Role	Expected Outcome
AI Competency Development	Capacity building for educational personnel	Organizational adaptability
Sustainable Educational Value Creation	Long-term educational and societal impact	Sustainable institutional development

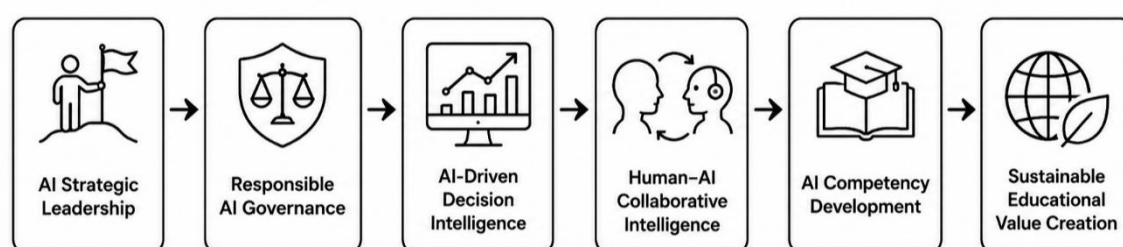


Figure 3. Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework)

4.3 AI-Driven Decision Intelligence

AI-Driven Decision Intelligence transforms institutional data into strategic

knowledge that supports evidence-based decision-making. Unlike traditional information systems, AI enables educational institutions to predict trends, identify risks, optimize resource allocation, and support strategic planning through predictive analytics and machine learning.

Its effectiveness depends not only on data quality but also on responsible

governance and strategic leadership. Therefore, AI-driven decision intelligence should be viewed as an augmentation mechanism that strengthens rather than replaces human judgment

in educational decision-making.

4.4 Human–AI Collaborative Intelligence

The AIGEM Framework positions AI as a collaborative partner rather than a

substitute for educational professionals. AI contributes computational efficiency and

predictive capability, while humans provide contextual understanding, ethical reasoning, creativity, and strategic leadership.

Effective educational management therefore relies on Human–AI Collaborative

Intelligence, in which AI supports evidence-based decisions while humans retain responsibility for strategic and ethical judgment.

4.5 AI Competency Development

Successful AI adoption requires continuous development of human capabilities.

Beyond AI literacy, educational personnel should develop competencies in data literacy, digital ethics, strategic thinking, innovation, change leadership, and lifelong learning.

These competencies enhance organizational adaptability, strengthen institutional resilience, and enable educational organizations to maximize the benefits of AI-driven transformation.

4.6 Sustainable Educational Value Creation

Sustainable Educational Value Creation represents the ultimate outcome of the AIGEM Framework. Rather than emphasizing technological efficiency alone, the framework focuses on creating long-term educational, organizational, and societal value through responsible AI implementation.

This study argues that sustainable value emerges from the interaction among strategic leadership, responsible governance, intelligent decision-making, human–AI collaboration, and competency development. Consequently, AI is conceptualized as a strategic enabler of sustainable educational management rather than an end in itself.

Theoretical Propositions

The AIGEM Framework proposes six theoretical relationships for future empirical validation:

- P1: AI Strategic Leadership positively influences Responsible AI Governance.
- P2: Responsible AI Governance positively enhances AI-Driven Decision Intelligence.
- P3: AI-Driven Decision Intelligence positively strengthens Human–AI Collaborative Intelligence.
- P4: Human–AI Collaborative Intelligence positively promotes AI Competency Development.
- P5: AI Competency Development positively contributes to Sustainable Educational Value Creation.
- P6: Responsible AI Governance mediates the relationship between AI Strategic Leadership and Sustainable Educational Value Creation.

This study develops the Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework) as an integrated conceptual model for AI-enabled educational management. Unlike previous studies that emphasize technology adoption, the framework conceptualizes AI as an organizational capability supported by strategic leadership, responsible governance, intelligent decision-making, human–AI collaboration, competency development, and sustainable value creation. The framework provides a theoretical foundation for future empirical research and practical guidance for AI-driven educational transformation.

5. Discussion

Artificial intelligence is transforming educational management from technology-based administration to intelligent organizational governance. While previous studies have primarily emphasized AI applications in teaching and learning (Holmes et al., 2022; Zawacki-Richter et al., 2019), the AIGEM Framework broadens this perspective by positioning AI as a strategic organizational capability rather than merely an instructional technology.

Unlike conventional digital transformation models that focus mainly on technology adoption (Vial, 2019; Westerman et al., 2014), the AIGEM Framework highlights the integration of strategic leadership, responsible AI governance, intelligent decision-making, human–AI collaboration, competency development, and sustainable value creation. This perspective aligns with the principles of UNESCO

(2021) and OECD (2019), emphasizing that AI should be implemented through transparency, accountability, human oversight, and ethical governance.

The framework also reinforces the concept of Human–AI Collaborative Intelligence, arguing that AI should enhance rather than replace human expertise. Sustainable educational management therefore depends on balancing technological capability with human judgment, ethical responsibility, and organizational learning.

Finally, the AIGEM Framework extends current AI governance literature by explicitly linking responsible AI implementation with SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 16 (Peace, Justice and Strong Institutions). This demonstrates that successful AI adoption should be evaluated not only by operational efficiency but also by its contribution to sustainable educational development.

Table 5. Comparison Between Existing Models and the AIGEM Framework

Framework	Primary Focus	Limitation	Contribution of AIGEM
Digital Transformation	Technology adoption	Limited governance	Integrates leadership and AI governance
AI in Education	Teaching and learning	Classroom-oriented	Institution-wide management
Responsible AI	Ethics and regulation	Limited educational perspective	Governance capability
Human-Centered AI	Human–AI interaction	Limited organizational focus	Human–AI collaboration
AIGEM Framework	Integrated educational management		Leadership, governance, intelligence, competency, sustainability

5.1 Theoretical Contribution

The principal contribution of this study is the development of the Artificial

Intelligence Governance for Educational Management Framework (AIGEM Framework). The framework extends digital transformation theory by positioning AI governance as the central organizational capability and integrates leadership, governance, decision intelligence, collaboration, competency development, and sustainability into a unified conceptual model. It also provides a theoretical foundation for future empirical studies on AI-enabled educational management.

5.2 Practical Contribution

The AIGEM Framework offers practical guidance for educational institutions by

supporting institutional AI strategies, responsible governance, evidence-based decision-making, AI competency development, and sustainable organizational transformation. The framework can assist educational leaders and policymakers in implementing AI responsibly while enhancing educational quality, institutional resilience, and long-term public value.

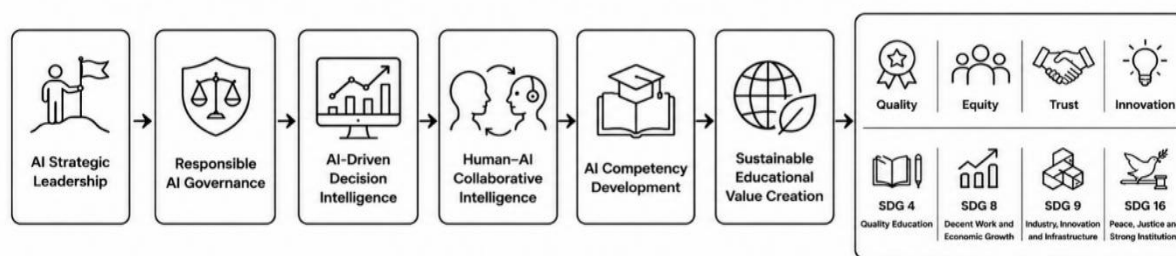


Figure 4. New Knowledge Generated by the AIGEM Framework

6. Policy Implications

The rapid advancement of artificial intelligence requires educational institutions to move beyond isolated technology adoption toward comprehensive institutional transformation. Based on the proposed Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework), six policy implications are recommended for educational leaders and policymakers.

First, educational institutions should develop institution-wide AI strategies aligned with organizational missions and long-term development plans. AI initiatives should not be implemented independently by individual departments but should constitute part of an integrated institutional strategy that supports educational quality, organizational innovation, and sustainable development.

Second, institutions should establish formal AI Governance Committees responsible for developing AI policies, supervising ethical implementation, assessing organizational risks, and ensuring compliance with legal and regulatory requirements. Such governance mechanisms are essential for maintaining transparency, accountability, and public trust.

Third, educational organizations should invest systematically in AI competency development for administrators, faculty members, staff, and students. Professional development programs should extend beyond technical AI skills to

include data literacy, digital ethics, critical thinking, strategic leadership, and responsible AI utilization.

Fourth, educational institutions should strengthen digital infrastructure by investing in secure data platforms, cloud computing, cybersecurity, learning analytics, and AI-enabled decision-support systems. Institutional infrastructure should facilitate interoperability while protecting privacy and ensuring information security.

Fifth, AI implementation should explicitly support the United Nations Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 16 (Peace, Justice and Strong Institutions). Aligning AI initiatives with these goals ensures that technological innovation contributes to broader educational and societal development.

Finally, educational institutions should establish continuous monitoring and evaluation systems to assess the organizational impact of AI. Evaluation should encompass not only operational efficiency but also educational quality, equity, stakeholder trust, ethical compliance, organizational resilience, and long-term sustainability. Such comprehensive evaluation enables institutions to refine AI strategies and respond effectively to emerging technological developments.

Table 6. Policy Recommendations for AI-Enabled Educational Management

Policy Area	Recommended Action	Expected Outcome
AI Strategy	Develop institutional AI strategic plans	Organizational readiness
AI Governance	Establish AI governance committees	Responsible AI implementation
Human Capital	Strengthen AI competency development	Future-ready workforce
Digital Infrastructure	Invest in secure AI-enabled technologies	Intelligent educational ecosystem
Sustainable Development	Align AI initiatives with SDGs	Long-term public value
Institutional Evaluation	Implement continuous AI impact assessment	Sustainable organizational improvement

7. Conclusion

Artificial intelligence is rapidly reshaping educational management by expanding organizational capabilities in planning, governance, decision-making, and institutional development. While existing studies have primarily focused on AI applications in teaching and learning, comparatively limited attention has been given to AI as a strategic organizational capability capable of transforming educational institutions holistically.

This study addressed that limitation by developing the Artificial Intelligence Governance for Educational Management Framework (AIGEM Framework) through conceptual synthesis. The framework integrates six interrelated organizational dimensions: AI Strategic Leadership, Responsible AI Governance, AI-Driven Decision Intelligence, Human-AI Collaborative Intelligence, AI Competency Development, and Sustainable Educational Value Creation. Collectively, these dimensions explain how educational institutions can strategically adopt artificial intelligence while maintaining ethical governance, organizational resilience, and sustainable educational development.

The principal contribution of the study lies in reconceptualizing artificial intelligence from

a technological resource into a governance capability that requires institutional leadership, organizational learning, and continuous competency development. Unlike previous conceptual models that emphasize technological adoption, the AIGEM Framework demonstrates that the long-term success of AI implementation depends upon the interaction among leadership, governance, collaborative intelligence, and human capability.

From a theoretical perspective, the framework extends existing theories of digital transformation, responsible AI, and educational leadership by integrating these perspectives into a single conceptual model. From a practical perspective, the framework provides educational leaders and policymakers with a strategic reference for institutional AI planning, governance development, competency enhancement, and sustainable organizational transformation.

The framework also highlights that sustainable educational management should not be evaluated solely by technological advancement or organizational efficiency. Instead, successful AI implementation should be measured according to its ability to enhance educational quality, promote equity, strengthen institutional trust, foster innovation, and generate long-term public value.

In this regard, artificial intelligence should be viewed not as the destination of educational transformation but as a strategic enabler of sustainable educational development.

Future research should empirically validate the proposed framework using quantitative, qualitative, and mixed-method research designs across diverse educational contexts. Comparative studies among schools, universities, and vocational institutions, as well as cross-national investigations, would further strengthen understanding of AI governance and institutional transformation in the rapidly evolving landscape of artificial intelligence.

Novel Contribution of the Study

This article makes four principal contributions to the literature.

1. It develops the Artificial Intelligence Governance for Educational Management

Framework (AIGEM Framework) as a new conceptual model for AI-enabled educational management.

2. It reconceptualizes AI Governance as a strategic organizational capability rather than merely a regulatory or ethical mechanism.
3. It integrates strategic leadership, responsible AI, decision intelligence, human-AI collaboration, competency development, and sustainability into a unified framework.
4. It explicitly aligns AI-enabled educational management with SDG 4, SDG 8, SDG 9, and SDG 16, thereby extending discussions of artificial intelligence beyond technological innovation toward sustainable public value creation.

References

- Aoun, J. E. (2017). *Robot-proof: Higher education in the age of artificial intelligence*. MIT Press.
- Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2021). Emergency remote teaching in higher education: Mapping the first global online semester. *International Journal of Educational Technology in Higher Education*, 18(1), Article 50.
<https://doi.org/10.1186/s41240-1253-00282-x>
- Brown, M., McCormack, M., Reeves, J., Brooks, D. C., Grajek, S., Alexander, B., Bali, M., Bulger, S., Dark, S., Engelbert, N., Gannon, K., Gibson, D., Gibson, R., Lundin, B., & Veletsianos, G. (2020). 2020 EDUCAUSE Horizon Report: Teaching and Learning Edition. EDUCAUSE.
- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton.
- Castells, M. (2010). *The rise of the network society* (2nd ed.). Wiley-Blackwell.
- Daugherty, P. R., & Wilson, H. J. (2018). *Human + machine: Reimagining work in the age of AI*. Harvard Business Review Press.
- Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., Dennehy, D., Metri, B., Buhalis, D., Cheung, C. M. K., Conboy, K., Doyle, R., Dubey, R.,
- Dutot, V., Felix, R., Goyal, D. P., Gustafsson, A., Hinsch, C., Jebabli, I., ... Wamba, S. F. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on the opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642.
<https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- European Commission. (2024). *AI literacy in education and training*. Publications Office of the European Union.
- Floridi, L. (2019). Establishing the rules for building trustworthy AI. *Nature Machine Intelligence*, 1(6), 261–262.
<https://doi.org/10.1038/s41240-1253-0055-y>
- Floridi, L., & Cows, J. (2019). A unified framework of five principles for AI in society. *Harvard Data Science Review*, 1(1). <https://doi.org/10.1162/99608f92.8cd550d1>
- Floridi, L., Cows, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Luetge, C., Madelin, R., Pagallo, U.,

Rossi, F., Schafer, B., Valcke, P., & Vayena, E. (2018). AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and Machines*, 28(4), 689–707. <https://doi.org/10.1007/s11240-1253-1240-1253>

Fullan, M. (2020). *Leading in a culture of change* (2nd ed.). Jossey-Bass.

Holmes, W., Bialik, M., & Fadel, C. (2022). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.

Jaakkola, E. (2020). Designing conceptual articles: Four approaches. *AMS Review*, 10(1–2), 18–26. <https://doi.org/10.1007/s11240-1253-01240-1253>

Leal Filho, W., Salvia, A. L., Paço, A., Anholon, R., Quelhas, O. L. G., Rampasso, I. S., Ng, A., Balogun, A.-L., Brandli, L., & others. (2021). A framework for implementing the Sustainable Development Goals in university programmes. *Journal of Cleaner Production*, 299, 126915. <https://doi.org/10.1016/j.jclepro.2021.126915>

National Institute of Standards and Technology. (2023). *Artificial Intelligence Risk Management Framework (AI RMF 1.0)*. U.S. Department of Commerce.

Organisation for Economic Co-operation and Development. (2019). *OECD principles on artificial intelligence*. OECD Publishing.

Organisation for Economic Co-operation and Development. (2023). *OECD Digital Education Outlook 2023: Towards an effective digital education ecosystem*. OECD Publishing. <https://doi.org/10.1787/c74f03de-en>

Organisation for Economic Co-operation and Development. (2024). *Artificial intelligence and the future of education*. OECD Publishing.

Shneiderman, B. (2022). *Human-centered AI*. Oxford University Press.

UNESCO. (2021). *Recommendation on the ethics of artificial intelligence*. UNESCO.

UNESCO. (2023). *Guidance for generative AI in education and research*. UNESCO.

United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>

Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press.

World Economic Forum. (2025). *The Future of Jobs Report 2025*. World Economic Forum.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education: Where are the educators? *International Journal of Educational Technology in Higher Education*, 16, Article 39. <https://doi.org/10.1186/s41240-1253-1240-1253>

Zawacki-Richter, O., Marín, V. I., Bond, M., & Kerres, M. (2023). Artificial intelligence in higher education: Recent developments and future directions. *International Journal of Educational Technology in Higher Education*, 20, Article 53. <https://doi.org/10.1186/s41239-1240-12531240-1253>