

Leadership Lens on Artificial Intelligence: How School Leaders Leverage AI for Efficiency, Development, and Change

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Abstract

This study examined the extent of Artificial Intelligence (AI) integration in educational leadership practices among school heads in basic education schools in Dapitan City. It aimed to determine how AI is utilized across six leadership domains: administrative efficiency, instructional leadership support, data-driven decision-making, professional development and capacity-building, ethical and responsible AI governance, and innovation and change management. The study was anchored on established leadership perspectives emphasizing instructional leadership, data-informed decision-making, transformational leadership, and ethical leadership as conceptual foundations for understanding AI-enabled school leadership. A descriptive-quantitative research design was employed. Data were gathered using a structured survey questionnaire based on a validated technology leadership framework and adapted to reflect AI integration in school leadership functions. The respondents were school heads from basic education institutions in Dapitan City, who are directly responsible for instructional supervision, policy implementation, and school management. Descriptive statistics, specifically mean and standard deviation, were used to analyze the extent of AI integration across the identified domains. Findings revealed that AI is integrated into school leadership practices to a “Great Extent,” with an overall mean of 3.23. The highest level of integration was observed in administrative efficiency (3.27) and data-driven decision-making (3.26), both interpreted as “Very Great Extent,” indicating strong utilization of AI in operational management and analytical decision support. Instructional leadership support (3.20), professional development and capacity-building (3.22), ethical and responsible AI governance (3.20), and innovation and change management (3.20) were all interpreted as “Great Extent,” reflecting moderate but developing integration in pedagogical, developmental, and governance-related functions. Overall, results indicate that AI adoption in school leadership is progressing from operational efficiency toward broader strategic and instructional integration. The study concludes that while AI is substantially embedded in school leadership practices, its full transformative potential has not yet been maximized, particularly in instructional and governance domains. Strengthening digital leadership competencies, structured policy frameworks, and institutional support systems is recommended to enhance responsible and effective AI integration. In terms of sustainability, the study aligns with SDG 4 (Quality Education) by promoting improved educational leadership and institutional effectiveness through AI adoption. It also supports SDG 9 (Industry, Innovation and Infrastructure) by advancing digital transformation in school systems, and SDG 16 (Peace, Justice, and Strong Institutions) by emphasizing ethical governance, transparency, and accountability in technology use. From a sustainability perspective, the findings highlight institutional and governance sustainability by encouraging responsible AI integration that strengthens school management systems and leadership capacity. It also supports socio-technical sustainability by promoting balanced adoption of emerging technologies that enhance efficiency while ensuring ethical and human-centered decision-making in education.

Keywords: Administrative Efficiency, Artificial Intelligence, Data-Driven Decision-Making, Digital Leadership, Educational Leadership, Innovation and Change Management, Instructional Leadership, Professional Development, School Heads, Technology Integration

1. Introduction

Artificial Intelligence (AI) is rapidly transforming educational leadership by changing how school leaders manage institutions, make decisions, and respond to organizational change. Earlier AI applications in education were largely centered on teaching and learning, but recent scholarship emphasizes AI’s growing relevance in leadership and governance. AI is increasingly positioned as a strategic resource that supports institutional planning, operational efficiency, and innovation, enabling leaders to navigate complex educational environments more effectively (Karakose, 2025; Holmes et al., 2022). Contemporary school leadership now requires more than traditional supervision. Leaders are expected to interpret institutional data, promote digital integration, and sustain innovation within schools. AI-supported systems provide tools for communication, performance monitoring, and strategic coordination, allowing leaders to generate real-time insights for planning and decision-making (Zawacki-Richter et al., 2019). As a result, educational leadership is becoming more data-informed, technology-enabled, and innovation-oriented.

The literature identifies administrative efficiency as one of the most immediate benefits of AI in educational leadership. AI-driven platforms help manage documentation, organize records, optimize scheduling, and support resource allocation. By automating routine and time-intensive tasks, AI enables school leaders to focus more on strategic priorities and instructional improvement. Recent studies indicate that AI-supported management systems contribute significantly to operational effectiveness and institutional productivity (Holmes et al., 2022; Williamson & Eynon, 2020). AI also supports instructional leadership by helping leaders monitor student performance trends, identify instructional gaps, and guide teacher support initiatives. These functions allow leaders to make informed decisions on curriculum implementation, instructional supervision, and academic program development. Research suggests that AI-enhanced analytical tools strengthen leadership capacity to support teaching and learning by providing timely and actionable insights (Berkovich & Bogler, 2020; Luckin et al., 2016).

Another major theme is data-driven decision-making. As institutional data becomes increasingly available, school leaders are expected to use evidence-based practices in planning and governance. AI technologies facilitate the collection, analysis, and interpretation of large datasets, allowing leaders to identify patterns, predict outcomes, and make strategic decisions grounded in empirical evidence (Mandinach & Gummer, 2016; Zawacki-Richter et al., 2019). This strengthens institutional planning, targeted interventions, and resource utilization. AI integration further contributes to professional development and organizational capacity-building. As schools adopt intelligent systems, leaders become responsible for fostering digital competence, AI literacy, and continuous learning among educators. This capacity-building role positions school leaders as facilitators of professional growth and institutional readiness in technology-rich environments (Hallinger, 2011).

However, the literature also highlights ethical and governance concerns. The use of AI in schools raises issues related to data privacy, algorithmic bias, transparency, and accountability. Recent research emphasizes that effective leadership is necessary in establishing policies that protect stakeholder rights while promoting equitable and transparent use of intelligent technologies (Brown & Treviño, 2006; Zhai et al., 2023). Innovation and change management also emerge as recurring themes. AI integration requires school leaders to manage transitions, foster acceptance of new technologies, and maintain innovation while ensuring organizational stability. Studies highlight that leadership plays a pivotal role in managing technological change and ensuring that digital transformation aligns with institutional goals and values (Karakose, 2025).

Globally, interest in AI in education continues to expand, particularly in relation to educational management, decision-making, and institutional transformation. Recent systematic reviews show that AI is increasingly embedded in leadership functions. Holmes et al. (2022) reported that AI technologies enhance administrative efficiency and optimize decision-making through the analysis of large institutional datasets. Zawacki-Richter et al. (2019) found that intelligent systems sharpen organizational strategy, analytical thinking, and institutional interaction, making AI a central component of leadership practice. Research growth is also evident in international publication trends. Holmes, Bialik, and Fadel (2019) and Zawacki-Richter et al. (2019) analyzed over 2,000 publications and found that research on AI in leadership is rapidly expanding, with strong emphasis on decision-making, management efficiency, and digital transformation in educational institutions. Berkovich & Bogler (2020) further emphasized that leadership research must evolve to account for the influence of generative AI on organizational processes and instructional environments. In the local context, the study focuses on school leaders in basic education schools in Dapitan City. The study is important because much of the existing literature has focused on classroom applications, higher education, and technologically advanced settings. Limited empirical research has examined how school leaders themselves perceive and utilize AI in leadership functions, particularly in developing educational contexts. Understanding leadership perspectives is essential because the success of AI integration depends largely on how leaders interpret its value, guide its implementation, and embed it into institutional practices (Zawacki-Richter et al., 2019).

This study is grounded in four complementary leadership theories: Instructional Leadership Theory, Data-Driven Decision-Making Theory, Transformational Leadership Theory, and Ethical Leadership Theory. These theories explain how school leaders can leverage AI in administrative efficiency, instructional support, decision-making, professional growth, ethical governance, and innovation management (Hallinger & Murphy, 1985; Hallinger, 2011), (Mandinach & Gummer, 2016), (Burns, 1978; Bass, 1985), and (Brown & Treviño, 2006). Instructional Leadership Theory emphasizes the leader's central role in improving teaching and learning through supervision, monitoring, and academic coordination (Hallinger, 2011). In relation to AI, intelligent systems strengthen leaders' ability to track performance, identify instructional needs, and support teaching effectiveness. Data-Driven Decision-Making Theory, as advanced by Mandinach and Gummer (2016), highlights the importance of evidence-based leadership. AI expands leaders' capacity to collect, analyze, and interpret institutional data, allowing more precise planning, resource allocation, and strategic action.

Transformational Leadership Theory (Burns, 1978; Bass, 1985) explains how leaders drive change, build institutional capacity, and foster innovation. AI integration represents an organizational shift that requires leaders to guide adaptation, support professional development, and sustain continuous improvement. Ethical Leadership Theory (Brown & Treviño,

2006) provides the foundation for ethical and responsible AI governance. Since AI involves data use, automated systems, and emerging technologies, school leaders must ensure transparency, fairness, accountability, and responsible policy direction in AI adoption. Conceptually, the study views AI as a strategic leadership support mechanism that strengthens school leaders' performance across administrative, instructional, and organizational functions. The framework assumes that the extent of AI use influences how efficiently leaders manage operations, support instruction, make evidence-based decisions, develop professional capacity, uphold ethical governance, and lead innovation. Overall, AI is treated as an enabling force that enhances leadership effectiveness across key domains of school practice.

Although AI in education has received increasing scholarly attention, existing research has focused largely on classroom applications, student learning outcomes, higher education, and technologically advanced environments. Limited empirical work has examined how basic education school leaders perceive and use AI in performing leadership functions, especially in developing or localized contexts. This gap justifies the need to study AI through the leadership lens. The study addresses this gap by examining the extent to which school leaders integrate AI across six functional domains: administrative efficiency, instructional leadership support, data-driven decision-making, professional development and capacity-building, ethical and responsible AI governance, and innovation and change management. By situating AI within the leadership practices of school administrators in Dapitan City, the study provides empirical insights into how intelligent technologies shape leadership roles, strengthen institutional capacity, and influence school improvement processes.

The study aligns most directly with SDG 4 – Quality Education because it examines how AI can support school leadership, instructional improvement, professional development, and data-informed decision-making in basic education. By exploring how school leaders use AI to strengthen administrative and instructional functions, the research contributes to improving the quality, responsiveness, and effectiveness of educational institutions. The study also aligns with SDG 9 – Industry, Innovation and Infrastructure because it focuses on digital transformation, AI integration, and innovation management within school systems. AI is presented as a technology-enabled resource that can improve institutional systems, strengthen organizational capacity, and support innovation in educational leadership. SDG 16 – Peace, Justice, and Strong Institutions is also relevant because the study emphasizes ethical and responsible AI governance. The focus on transparency, accountability, data privacy, and responsible leadership supports the development of trustworthy institutional practices in the use of intelligent technologies. SDG 17 – Partnerships for the Goals may also apply because AI integration in schools requires coordinated support among school leaders, teachers, institutions, policy actors, and technology stakeholders. The study's emphasis on governance, capacity-building, and institutional oversight reflects the need for collaborative action in sustaining responsible AI-supported education.

This study contributes to educational sustainability by examining how AI can help school leaders improve administrative efficiency, instructional support, professional development, and evidence-based decision-making. Stronger leadership practices can support more responsive and future-ready schools, particularly in basic education contexts. The study also contributes to technological and innovation sustainability by positioning AI as a tool for institutional improvement rather than merely a classroom technology. It emphasizes the need for digital leadership competencies, responsible AI use, and structured governance so that technology adoption remains effective, ethical, and aligned with school goals. In terms of policy and governance sustainability, the study highlights the importance of ethical frameworks, institutional oversight, transparency, and accountability in AI adoption. These concerns are essential in ensuring that AI-supported leadership strengthens institutions without compromising fairness, trust, or stakeholder rights. Finally, the study supports socio-economic and institutional sustainability by showing how AI can reduce routine administrative burdens, improve planning, support professional capacity-building, and enhance organizational responsiveness. In this way, the research connects educational leadership, technology use, ethical governance, and institutional development within a multidisciplinary sustainability perspective.

2. Material and methods

2.1 Research Design

The study used a descriptive–quantitative design to systematically measure and describe the extent of AI integration in educational leadership practices. This design was appropriate for obtaining quantifiable data on school leaders' utilization of AI across administrative, instructional, decision-making, professional development, ethical governance, and innovation-related functions.

2.2 Locale of the Study

The study was conducted in Dapitan City, focusing on basic education schools within the division. The selected locale provided a relevant context for examining how school heads in public basic education institutions integrate AI tools into leadership and management practices.

2.3 Respondents of the Study

The respondents were school heads in basic education schools in Dapitan City. They were chosen because they serve as primary instructional and administrative leaders responsible for decision-making, policy implementation, and overall school management, making them suitable informants on AI integration in leadership functions.

2.4 Sample and Sampling Procedure

The study utilized school heads as respondents based on their leadership roles in basic education institutions. Participants were selected to ensure that those directly involved in school administration and instructional supervision provided informed and relevant data regarding AI utilization in leadership practices.

2.5 Research Instrument

Data were collected using a structured survey questionnaire anchored on the Principal Technology Leadership Assessment (PTLA) framework developed by Hughes et al. (2006). The instrument measured technology leadership and was contextualized to assess AI integration across six domains: administrative efficiency, instructional leadership support, data-driven decision-making, professional development and capacity-building, ethical and responsible AI governance, and innovation and change management. The questionnaire employed a Likert-scale format to determine the perceived extent of AI utilization in leadership practices.

2.6 Data Gathering Procedure

The data gathering process followed a systematic and ethical procedure. Permissions were obtained from relevant educational authorities and school administrators prior to data collection. Participants were informed about the study and provided informed consent, ensuring voluntary participation, confidentiality, and data protection. The survey questionnaire was administered either in printed form or online, depending on respondent accessibility. After data collection, responses were checked for completeness and accuracy before analysis.

2.7 Data Analysis Techniques

Collected data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, particularly mean and standard deviation, were used to determine the extent of AI integration across leadership domains, including administrative efficiency, instructional leadership support, data-driven decision-making, professional development, ethical governance, and innovation management. The results provided a summary of AI utilization patterns among school leaders.

2.8 Ethical Considerations

The study adhered to ethical research standards based on the APA Ethics Code (2020) and the Data Privacy Act of 2012 (Republic Act No. 10173). Participation was voluntary, and informed consent was secured prior to data collection. Respondents' anonymity and confidentiality were strictly maintained, with no personally identifiable information collected. All data were securely stored, used solely for research purposes, and disposed of properly after the required retention period. Institutional approval was obtained to ensure compliance with ethical research protocols.

3. Results and Discussion

3.1 Extent of AI Integration in Educational Leadership Domains

3.1.1 Administrative Efficiency and Data-Driven Decision-Making

The results show that Administrative Efficiency obtained a mean of 3.27 (SD = 0.63), interpreted as "Very Great Extent," while Data-Driven Decision-Making obtained a mean of 3.26 (SD = 0.65), also interpreted as "Very Great Extent." These indicate that AI is highly utilized in administrative tasks such as documentation, scheduling, communication, and resource management, as well as in supporting data-based planning and decision-making processes. These findings suggest that AI is most strongly integrated in operational and analytical leadership functions. This aligns with evidence that AI adoption in education is initially concentrated in efficiency-driven and data-processing domains due to their immediate utility and lower implementation complexity (Zawacki-Richter et al., 2019). Similarly, Holmes et al. (2022) emphasized that AI strengthens leaders' capacity to analyze large datasets and support strategic decision-making, reinforcing the results of this study.

3.1.2 Instructional Leadership Support and Professional Development

The findings reveal that Instructional Leadership Support obtained a mean of 3.20 (SD = 0.63), interpreted as "Great Extent," while Professional Development and Capacity-Building obtained a mean of 3.22 (SD = 0.64), also interpreted as "Great Extent." This indicates that AI is moderately utilized to support instructional supervision, monitoring of teaching performance, and professional learning activities for educators. The results imply that while AI is already contributing to instructional improvement and capacity-building, its integration is not as strong as in administrative functions. This supports international findings that pedagogical and developmental integration of AI tends to progress more slowly due to

training gaps and alignment challenges (Luckin et al., 2016; Williamson & Eynon, 2020). The findings highlight the need for strengthened digital leadership competencies to maximize AI's instructional potential.

3.1.3 Ethical Governance and Innovation and Change Management

The results show that Ethical and Responsible AI Governance obtained a mean of 3.20 (SD = 0.67), while Innovation and Change Management also obtained a mean of 3.20 (SD = 0.67), both interpreted as "Great Extent." This indicates that school leaders demonstrate awareness and emerging practice in ensuring ethical AI use and managing innovation processes, although these areas are not yet fully developed. These findings suggest that ethical frameworks and structured innovation strategies are still evolving in basic education leadership contexts. This aligns with Zhai et al. (2023), who emphasized that ethical governance systems often lag behind technological adoption. Similarly, Aoun (2017) noted that successful digital transformation requires strong leadership vision and sustained change management strategies, which remain developing in many institutions.

3.1.4 Overall Extent of AI Integration

The overall mean score of 3.23 (SD = 0.65), interpreted as "Great Extent," indicates that AI integration among school leaders is already substantial but not yet fully optimized. The results show a functional hierarchy of integration, with strongest use in administrative and data-driven domains, followed by moderate use in instructional, developmental, governance, and innovation domains. This pattern reflects global trends where AI adoption in education begins with operational efficiency before expanding into instructional transformation and ethical institutionalization (Zawacki-Richter et al., 2019; Holmes et al., 2022). The findings confirm that AI is functioning as a strategic enabler of leadership effectiveness, particularly in improving efficiency and analytical capacity.

3.2 Synthesis of Key Findings

Overall, the results demonstrate that AI integration is well-established in administrative and decision-making functions but remains developing in instructional leadership, professional development, governance, and innovation management. This suggests a gradual transition from operational adoption toward more strategic and instructional integration. The findings also highlight the need for policy support, leadership training, and governance structures to fully maximize AI's potential in educational leadership practice.

3.3 Discussion of Implications

The study indicates that while AI already enhances leadership efficiency and data use, its broader transformational role is still emerging. Strengthening digital leadership competencies and ethical governance frameworks is essential to ensure sustainable and responsible AI integration in schools. These results contribute to the growing body of literature on AI in educational leadership by providing empirical evidence from a basic education context, addressing the gap in localized studies on leadership-level AI utilization.

4. Conclusion & Recommendations

The study concludes that Artificial Intelligence (AI) is substantially integrated into school leadership practices in basic education institutions, particularly in administrative efficiency and data-driven decision-making, while instructional leadership, professional development, ethical governance, and innovation and change management demonstrate moderate but developing levels of integration. These findings indicate that AI adoption among school leaders is progressing from operational support toward broader strategic and instructional use. However, the results also highlight the need for strengthened governance structures, digital leadership competencies, and institutional oversight to ensure that AI integration remains effective, responsible, and aligned with educational goals.

Based on the findings, the study recommends the establishment and strengthening of structured AI governance policies to guide ethical and responsible use of artificial intelligence in school leadership. It further emphasizes the need to enhance digital leadership competencies among school heads through targeted training and capacity-building programs to improve instructional and strategic use of AI. Additionally, continuous institutional support and oversight are recommended to ensure that AI integration remains aligned with educational objectives, promotes innovation, and maintains accountability, transparency, and effectiveness in school management practices.

Compliance with ethical standards

The authors declare no conflict of interest. This study complied with recognized ethical standards for human-participant research by ensuring voluntary participation with informed consent, the right to withdraw without penalty, and strict confidentiality through anonymous, secure, and aggregated data handling. Given the focus on psychological well-being, procedures were non-invasive, and safeguards were observed to minimize discomfort, with guidance to appropriate support services when needed, and required institutional permissions were secured for instrument use and access to academic records.

REFERENCES

- Aoun, J. E. (2017). *Robot-proof: Higher education in the age of artificial intelligence*. MIT Press.
- American Psychological Association. (2020). *Ethical principles of psychologists and code of conduct*. <https://www.apa.org/ethics/code>
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press.
- Berkovich, I., & Bogler, R. (2020). Conceptualizing the mediating role of leadership in educational change. *Educational Management Administration & Leadership*, 48(1), 5–24.
- Brown, M. E., & Treviño, L. K. (2006). Ethical leadership: A review and future directions. *The Leadership Quarterly*, 17(6), 595–616. <https://doi.org/10.1016/j.leaqua.2006.10.004>
- Burns, J. M. (1978). *Leadership*. Harper & Row.
- Hallinger, P. (2011). Leadership for learning: Lessons from 40 years of empirical research. *Journal of Educational Administration*, 49(2), 125–142. <https://doi.org/10.1108/0957823111116699>
- Hallinger, P., & Murphy, J. (1985). Assessing the instructional leadership behavior of principals. *The Elementary School Journal*, 86(2), 217–248. <https://doi.org/10.1086/461445>
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.
- Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., Santos, O. C., & Rodrigo, M. M. T. (2022). Ethics of AI in education: Towards a community-wide framework. *International Journal of Artificial Intelligence in Education*, 32, 538–576. <https://doi.org/10.1007/s40593-021-00239-1>
- Hughes, J. E., Thomas, R., & Scharber, C. (2006). Assessing technology integration: The Principal Technology Leadership Assessment (PTLA) framework. *Journal of Research on Technology in Education*, 38(4), 399–419.
- Karakose, T. (2025). The role of educational leaders in the age of artificial intelligence (AI). *Educational Process: International Journal*, 16(2), e2025267. <https://doi.org/10.22521/edupij.2025.16.267>
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson Education.
- Mandinach, E. B., & Gummer, E. S. (2016). What does it mean for teachers to be data literate? Laying out the skills, knowledge, and dispositions. *Teaching and Teacher Education*, 60, 366–376. <https://doi.org/10.1016/j.tate.2016.07.011>
- Republic of the Philippines. (2012). *Data Privacy Act of 2012 (Republic Act No. 10173)*. Official Gazette. <https://www.officialgazette.gov.ph/2012/08/15/republic-act-no-10173/>
- Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), 223–235. <https://doi.org/10.1080/17439884.2020.1798995>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education*, 16(1), 1–27. <https://doi.org/10.1186/s41239-019-0171-0>
- Zhai, X., Chu, X., Chai, C. S., Jong, M. S. Y., Istenic, A., Spector, J. M., Liu, J., Yuan, J., & Li, Y. (2023). A review of artificial intelligence (AI) in education from a pedagogical perspective. *International Journal of Educational Technology in Higher Education*, 20, 1–26.