

MANAGING DIGITAL TRANSFORMATION IN ISLAMIC BOARDING SCHOOL: LEADERSHIP STRATEGIES FOR E-LEARNING IMPLEMENTATION

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Abstrak

Transformasi digital telah menjadi agenda strategis bagi lembaga pendidikan dalam meningkatkan kualitas pembelajaran, efektivitas tata kelola, dan keberlanjutan organisasi, termasuk pada lingkungan pesantren yang memiliki karakteristik pendidikan dan nilai keislaman yang khas. Penelitian ini bertujuan menganalisis strategi kepemimpinan dalam mengelola transformasi digital melalui implementasi e-learning di Islamic Boarding School Padepokan Kyai Mudrikah Kembang Kuning di Pamekasan, Indonesia. Penelitian menggunakan pendekatan kualitatif dengan desain studi kasus. Data dikumpulkan melalui wawancara semi terstruktur, observasi, dan analisis dokumen, kemudian dianalisis menggunakan model interaktif Miles, Huberman, dan Saldaña. Hasil penelitian menunjukkan bahwa keberhasilan transformasi digital tidak ditentukan semata-mata oleh ketersediaan teknologi, tetapi oleh kemampuan kepemimpinan dalam mengintegrasikan kepemimpinan strategis, pengelolaan sumber daya, pengembangan kapasitas sumber daya manusia, dan adaptasi kelembagaan ke dalam proses perubahan organisasi yang berkelanjutan. Penelitian ini memperluas perspektif manajemen pendidikan dengan menempatkan transformasi digital sebagai proses pengembangan organisasi yang didukung oleh pembelajaran institusional, kolaborasi, dan tata kelola adaptif, sekaligus mempertahankan identitas serta nilai-nilai pendidikan Islam sebagai fondasi keberlanjutan implementasi e-learning.

Kata Kunci: transformasi digital; kepemimpinan pendidikan; e-learning; manajemen pendidikan; pesantren

Abstract

Digital transformation has become a strategic priority for educational institutions seeking to improve learning quality, organizational effectiveness, and sustainable governance, including Islamic boarding schools with distinctive educational traditions and religious values. This study examined leadership strategies for managing digital transformation through the implementation of e-learning at Islamic Boarding School Padepokan Kyai Mudrikah Kembang Kuning in Pamekasan, Indonesia. A qualitative case study design was employed. Data were collected through semi-structured interviews, observations, and document analysis and analyzed using the interactive model of Miles, Huberman, and Saldaña. The findings indicate that successful digital transformation depends not merely on technology adoption but on leadership's capacity to integrate strategic leadership, resource management, human capacity development, and institutional adaptation into a sustainable organizational change process. The study contributes to the educational management literature by conceptualizing digital transformation as an organizational development process supported by institutional learning, collaborative governance, and adaptive management while preserving the educational identity and Islamic values that shape the long-term sustainability of e-learning implementation.

Keywords: digital transformation; educational leadership; e-learning; educational management; Islamic boarding school

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INTRODUCTION

Digital transformation has fundamentally reshaped how educational institutions are governed, organized, and sustained in response to increasingly complex learning environments. Rather than representing a simple shift toward technology adoption, it requires schools to redesign institutional processes, decision making, and learning ecosystems to remain responsive to rapid social and technological change. Recent international evidence shows that digital transformation has become a strategic priority for improving educational quality, strengthening institutional resilience, and expanding equitable access to learning opportunities across diverse contexts.² Nuraini³ and McCarthy⁴ also describes digital transformation as an organizational process that aligns technological innovation with institutional goals, leadership capacity, and long-term educational development.

Educational leadership has emerged as the central force that determines whether digital transformation evolves into meaningful institutional change or remains limited to technological adoption. School leaders shape this process by establishing a shared vision, mobilizing organizational resources, developing teachers' digital competencies, and cultivating conditions that encourage continuous innovation. Studies by Qiao⁵ and Fullan⁶ consistently report that successful digital transformation depends on leadership practices capable of integrating strategic planning, organizational learning, and collaborative decision making rather than relying solely on digital infrastructure or software availability. This perspective positions educational leadership as the foundation for understanding how digital transformation unfolds within schools operating under distinctive cultural and institutional contexts.

Islamic educational institutions encounter distinctive managerial demands as they integrate digital initiatives into educational practices rooted in religious traditions and community values. Their transition involves more than introducing new learning technologies because institutional leaders must preserve educational identity while responding to changing pedagogical expectations and technological developments. Islamic schools frequently experience tensions between maintaining established educational traditions and embracing digital innovation, requiring leadership that can balance organizational continuity with educational change.⁷ Successful digital initiatives in faith-based institutions rely on leaders who align technological development with institutional culture, stakeholder engagement, and

² Stéphan Vincent-Lancrin, "OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem," *OECD Publishing*, 2023, <https://doi.org/https://doi.org/10.1787/c74f03de-en>; Imam Iryanto, "The Impact of Digital Technology on Access and Quality of Education: A Comparative Literature Review in Developing and Developed Countries," *Journal of Educational Innovation and Transformation Global* 1, no. 1 (2025): 41–50, <https://doi.org/>.

³ Sri Nuraini, "Digital Leadership and Organizational Transformation: A Literature Review," *Jurnal Ilmiah WUNY* 7, no. 2 (2025): 171–82, <https://doi.org/https://doi.org/10.21831/jwuny.v6i1.85286> Digital.

⁴ Aidan Michael McCarthy et al., "Digital Transformation in Education: Critical Components for Leaders of System Change," *Social Sciences and Humanities Open* 8, no. 1 (2023): 100479, <https://doi.org/10.1016/j.ssaho.2023.100479>.

⁵ Guanming Qiao, Yannan Li, and Ahreum Hong, "The Strategic Role of Digital Transformation: Leveraging Digital Leadership to Enhance Employee Performance and Organizational Commitment in the Digital Era," *Systems* 12, no. 11 (2024), <https://doi.org/10.3390/systems12110457>.

⁶ Michael Fullan, *The Principal 2.0 (Three Keys to Maximizing Impact) (2nd Edition)* (California: Jossey-Bass, 2023).

⁷ Otong Sulaeman et al., "Islamic Education Reform in the Digital Age : Challenges and Opportunities for a Modern Curriculum," *Journal of Noesantara Islamic Studies* 2, no. 1 (2025): 1–11; Agung Safitri, Oki Darmawan, and Muhammad Anas Maarif, "Conflict Management in Islamic Educational Institutions in The Era of Digital Transformation: A Systematic Literature Review," *Re-JIEM (Research Journal of Islamic Educ Ation Management)*, no. Special Issue of 1st Income (International Conference on Management and Education) (2026): 329–42, <https://doi.org/https://doi.org/10.19105/re-jiem.vi.24247> 329.

long-term educational objectives rather than treating technology as an isolated instructional tool.⁸

Existing scholarship has generated valuable insights into digital learning within educational settings, yet much of the literature has concentrated on technological adoption rather than the managerial processes that sustain institutional transformation. Previous studies have predominantly examined technology acceptance, student learning outcomes, teacher readiness, digital literacy, and the effectiveness of online instruction across different educational contexts. Investigations conducted in Islamic educational settings have similarly emphasized instructional practices and learner experiences, leaving organizational leadership and strategic management comparatively underexplored.⁹ This pattern suggests the need for greater attention to how educational leaders guide institutional adaptation when digital transformation unfolds within schools shaped by distinctive religious, cultural, and organizational characteristics.

Digital transformation has progressed unevenly across Indonesian educational institutions, reflecting substantial differences in leadership capacity, organizational readiness, and technological resources. These variations become more pronounced in Islamic boarding schools, where educational leaders must accommodate national digital education policies while preserving institutional traditions that shape daily learning practices and community life. Digital initiatives often encounter organizational barriers related to strategic planning, professional development, infrastructure management, and stakeholder commitment, making leadership decisions increasingly influential throughout the transformation process.¹⁰ Despite these developments, empirical evidence explaining how school leaders navigate these interconnected managerial demands within Islamic boarding schools remains relatively limited.

This study responds to that need by examining digital transformation through the lens of educational leadership in an Indonesian Islamic boarding school that has actively integrated e-learning into its educational system. The institution represents a distinctive setting because its digital initiatives operate alongside a curriculum that combines religious learning, multilingual instruction, and student-centered academic activities within a residential educational environment. Examining leadership practices in this context offers an opportunity to understand how organizational decisions, resource management, and institutional values interact throughout the implementation of e-learning. Such evidence extends current discussions on educational management by illustrating how digital transformation is shaped through leadership practices rather than technological adoption alone.

Managing digital transformation within faith-based educational institutions requires leadership that extends beyond the adoption of digital technologies to encompass strategic planning, organizational coordination, and continuous institutional development. This perspective recognizes that successful e-learning implementation is shaped by leadership decisions influencing resource allocation, professional capacity, and organizational adaptation throughout the transformation process. The present study examines how leadership at an Indonesian Islamic boarding school managed digital transformation during the implementation

⁸ Mujahid Hussain, "Navigating the Tension : Islamic Value and Digital Transformation in Pakistani Educational Management," *At-Tarbawi: Jurnal Kajian Kependidikan Islam* 10, no. 2 (2025): 97–112, <https://doi.org/10.22515/attarbawi.v10i2.13017>.

⁹ Sutiah and Supriyono, "Enhancing Online Learning Quality: A Structural Equation Modeling Analysis of Educational Technology Implementation during the COVID-19 Pandemic," *Telematics and Informatics Reports* 16, no. November (2024): 100175, <https://doi.org/10.1016/j.teler.2024.100175>.

¹⁰ Rokhana Jahan Tumpa and Leila Naeni, "Improving Decision-Making and Stakeholder Engagement at Project Governance Using Digital Technology for Sustainable Infrastructure Projects," *Smart and Sustainable Built Environment* 14, no. 4 (April 1, 2025): 1292–1329, <https://doi.org/10.1108/SASBE-10-2024-0451>.

of e-learning by focusing on strategic leadership practices, resource management, human capacity development, and institutional responses to emerging organizational challenges. Through this approach, the study seeks to explain how leadership translates digital initiatives into sustainable educational practices while preserving the institution's religious identity and educational mission.

This study contributes to educational management by providing an integrated understanding of how digital transformation is managed within the distinctive context of an Islamic boarding school. The findings demonstrate that successful e-learning implementation is sustained through the interaction of strategic leadership, resource management, human capacity development, and institutional adaptation rather than through technological investment alone. By synthesizing these interconnected dimensions into a coherent leadership perspective, the study extends current discussions on digital transformation in faith-based education while offering practical insights for school leaders and policy makers seeking to strengthen organizational readiness and sustain digital innovation in comparable educational settings.

METHOD

A qualitative case study was employed to examine how leadership strategies shaped the implementation of e-learning as part of digital transformation in an Islamic boarding school. The design enabled an in-depth exploration of leadership practices within their natural organizational setting, where administrative decisions, institutional values, and technological initiatives continuously interacted throughout the transformation process. Robert K. Yin argues that case study research is particularly appropriate for investigating contemporary phenomena embedded in real-life contexts when contextual boundaries are inseparable from the phenomenon itself.¹¹ Following this perspective, the study was conducted at Islamic Boarding School Padepokan Kyai Mudrikah Kembang Kuning in Pamekasan, Indonesia, a residential Islamic educational institution that has incorporated e-learning into its educational system while preserving its distinctive religious traditions and educational identity.

Participants were selected purposively because the study required individuals who were directly involved in planning, managing, and implementing e-learning within the institution. The selection emphasized firsthand experience rather than numerical representation, allowing the investigation to capture diverse perspectives on leadership practices during the school's digital transformation. Data were generated through semi-structured interviews with the principal, teachers, and personnel responsible for digital learning management, complemented by classroom observations and an examination of institutional documents related to e-learning implementation. Fieldwork was carried out during the second semester of the 2025/2026 academic year, providing opportunities to observe leadership practices while digital learning activities were actively taking place.

Data analysis proceeded concurrently with data collection, allowing emerging patterns to inform subsequent interviews and observations throughout the fieldwork. Interview recordings were transcribed and organized alongside observation notes and institutional documents before the data were coded according to recurring issues related to leadership practices, organizational management, technological infrastructure, and human resource development. The analytical process followed the interactive model proposed by Matthew B. Miles, A. Michael Huberman, and Johnny Saldaña, involving data condensation, data display, and conclusion drawing as iterative activities rather than sequential procedures.¹² This approach facilitated the

¹¹Robert K. Yin, *Studi Kasus; Desain & Metode-Terj. M. Djauzi Mudzakir* (Depok: PT RajaGrafindo Persada, 2021).

¹²Matthew B Miles, A Michael Huberman, and Johnny Saldana, *Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed. (Arizona: SAGE Publication, Inc., 2014).

identification of relationships among categories and supported the development of themes that reflected leadership strategies in managing digital transformation within the institution.

Several measures were undertaken to strengthen the credibility and dependability of the findings throughout the research process. Information obtained from interviews was continuously compared with classroom observations and institutional documents to ensure consistency across different sources of evidence, while repeated engagement with participants helped clarify meanings that required further interpretation. Interview protocols were reviewed before field implementation to improve their clarity and relevance to the research objectives, and minor revisions were introduced following the preliminary review. Participant confidentiality was maintained by presenting the findings without disclosing personal identities, ensuring that the analysis remained focused on leadership practices and institutional experiences rather than individual participants.

RESULT AND DISCUSSION

Result

Leadership Strategies for Managing Digital Transformation

Findings derived from interviews, observations, and document analysis, corroborated through source and method triangulation, identified four interrelated leadership strategies that supported the management of digital transformation within the institution: (1) establishing a strategic direction that positioned e-learning as an integral component of institutional development, (2) strengthening organizational coordination through the distribution of responsibilities and collaborative implementation, (3) managing implementation through systematic planning, monitoring, and performance evaluation, and (4) promoting adaptive decision making to address emerging organizational and technological challenges. Collectively, these findings illustrate how leadership guided digital transformation through integrated strategic and managerial practices. A synthesis of the empirical findings is presented in Table 1.

Table 1. Leadership Strategies for Managing Digital Transformation

Leadership Strategy	Empirical Findings	Organizational Contribution
Strategic direction	Leadership positioned e-learning as part of the institution's long-term educational development while maintaining its educational mission and religious values.	Established a shared institutional direction for digital transformation.
Organizational coordination	Leadership coordinated teachers, administrative staff, and technical personnel through clear role distribution, collaborative communication, and institutional cooperation.	Strengthened organizational readiness and collaborative implementation.
Planning, monitoring, and evaluation	Leadership developed implementation plans, monitored learning activities, reviewed performance indicators, and evaluated the progress of digital learning initiatives.	Improved implementation consistency and institutional oversight.
Adaptive decision making	Leadership responded to technological, administrative, and operational challenges by adjusting policies, implementation strategies, and organizational procedures.	Enhanced institutional flexibility and the sustainability of digital transformation.

Source: Processed from researcher data

Strategic Resource Management for E-learning Implementation

Findings derived from interviews, observations, and document analysis, corroborated through source and method triangulation, identified four interrelated resource management practices that supported the implementation of e-learning: (1) strengthening digital

infrastructure through the provision of computers, Smart TVs, multimedia facilities, learning management systems, and the One Student One Laptop program, (2) improving internet connectivity and digital accessibility to facilitate teaching, learning, and institutional communication, (3) providing continuous technical support through system maintenance, training, and digital competency development for teachers and staff, and (4) optimizing digital platforms to support instructional delivery, academic communication, and institutional administration. Collectively, these findings demonstrate that resource management extended beyond technology provision to encompass institutional readiness for sustainable digital transformation. A synthesis of the empirical findings is presented in Table 2.

Table 2. Strategic Resource Management for E-Learning Implementation

Resource Management Dimension	Empirical Findings	Contribution to E-Learning Implementation
Digital infrastructure	The institution expanded access to computers, Smart TVs, multimedia facilities, learning management systems, and implemented the One Student One Laptop program.	Strengthened institutional readiness for digital learning.
Internet connectivity and accessibility	Internet services were continuously improved to support online instruction, academic communication, and institutional digital activities.	Enhanced accessibility and continuity of digital learning.
Technical support and digital competency	Technical assistance included system maintenance, teacher training, staff development, and periodic evaluations of digital systems.	Improved the effectiveness and sustainability of digital operations.
Digital platform utilization	Google Classroom, learning management systems, and other digital platforms were integrated into instructional activities, communication, and academic administration.	Increased the efficiency of teaching, learning, and institutional management.

Source: Processed from researcher data

Building Human Capacity for Digital Transformation

Findings derived from interviews, observations, and document analysis, corroborated through source and method triangulation, identified four interrelated strategies for strengthening human capacity during digital transformation: (1) enhancing teachers' digital competencies through continuous training and professional development, (2) integrating digital technologies into the institution's seven educational pillars, including Qur'an and Hadith memorization, (3) promoting students' engagement through digital learning platforms, digital libraries, and artificial intelligence-supported learning resources, and (4) strengthening collaboration among teachers, technical staff, and school leaders to support the continuous implementation of e-learning. Collectively, these findings indicate that human capacity development became a central organizational strategy for sustaining digital transformation beyond technological adoption. A synthesis of the empirical findings is presented in Table 3.

Table 3. Building Human Capacity for Digital Transformation

Human Capacity Dimension	Empirical Findings	Contribution to Digital Transformation
Teachers' digital competency	Teachers participated in continuous training, technical guidance, and professional development to improve digital teaching competencies.	Strengthened teachers' readiness to implement technology-supported instruction.
Pedagogical integration	Digital technologies were incorporated into the institution's seven educational pillars,	Supported the alignment of digital innovation with the

	including Qur'an and Hadith memorization, while maintaining established educational practices.	institution's educational model.
Student engagement	Google Classroom, digital libraries, artificial intelligence applications, and other digital learning resources were utilized to increase students' participation and learning accessibility.	Enhanced students' engagement and learning experiences in digital environments.
Collaborative human resource development	Teachers, technical personnel, and school leaders collaborated through coordinated training, technical assistance, and shared implementation responsibilities.	Fostered collaborative learning and strengthened institutional capacity for digital transformation.

Source: Processed from researcher data

Sustaining Digital Transformation Through Institutional Adaptation

Findings derived from interviews, observations, and document analysis, corroborated through source and method triangulation, identified four interrelated institutional strategies that supported the sustainability of digital transformation: (1) strengthening partnerships with parents and the local community to promote digital awareness and educational collaboration, (2) addressing environmental, social, and economic challenges by expanding digital access and providing educational support for students, (3) developing institutional resilience through contingency planning, technical support, and alternative learning arrangements during technological disruptions, and (4) establishing a long-term vision for continuous digital innovation by integrating infrastructure development, human resource improvement, and the preservation of Islamic educational values. Collectively, these findings demonstrate that the sustainability of digital transformation depended on the institution's capacity to adapt strategically to changing organizational and environmental conditions. A synthesis of the empirical findings is presented in Figure 1.

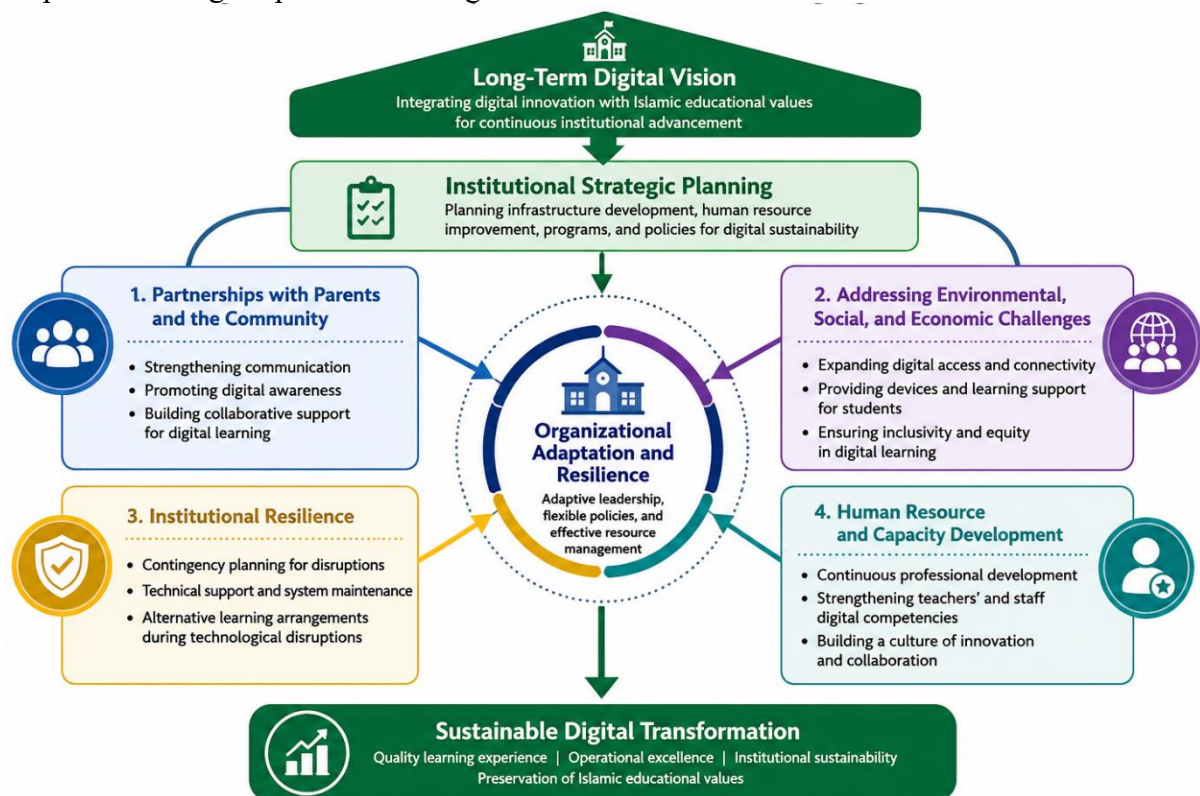


Figure 1. Institutional Adaptation Framework for Sustaining Digital Transformation

Discussion

Leadership Strategies for Managing Digital Transformation

Leadership strategies identified in this study indicate that digital transformation was managed as an institutional change process rather than as the implementation of educational technology alone. This orientation enabled school leaders to integrate strategic direction, organizational coordination, continuous monitoring, and adaptive decision making into a coherent institutional agenda that supported long-term educational development. Hallinger¹³ argues that educational leadership strengthens school improvement when strategic direction is consistently aligned with organizational goals and daily institutional practices. A comparable perspective is presented by Leithwood et.al, who emphasize that sustainable educational change depends on leaders' ability to build a shared vision and collective organizational commitment.¹⁴ The present findings reinforce these perspectives by demonstrating that digital transformation within an Islamic boarding school was embedded in institutional leadership rather than technological implementation alone.

Organizational coordination emerged as a critical leadership practice that translated institutional intentions into operational implementation across academic and administrative units. Coordinated responsibilities reduced implementation barriers and strengthened institutional readiness for digital transformation by encouraging collaboration among school leaders, teachers, and technical personnel. Spillane¹⁵ conceptualizes leadership as a practice emerging through interactions among leaders, followers, and organizational contexts rather than through individual authority alone. Malone¹⁶ similarly explains that collaborative leadership expands organizational capacity by promoting collective responsibility and professional collaboration during educational change. The present study extends these arguments by showing that organizational coordination also functioned to preserve institutional values while facilitating digital innovation within an Islamic boarding school.

Continuous monitoring and adaptive decision making strengthened the institution's capacity to sustain digital transformation under changing organizational and technological conditions. Leadership maintained implementation quality through systematic supervision, regular performance reviews, and timely adjustments to institutional strategies in response to emerging challenges. Heifetz, Grashow, and Linsky¹⁷ describe adaptive leadership as an organizational capability that enables institutions to respond effectively to complex and evolving environments through learning and adjustment. In the field of educational change, Fullan, Quinn, and McEachen¹⁸ argue that sustainable improvement depends on continuous organizational learning, collaborative engagement, and responsive leadership rather than fixed administrative procedures. The findings support these perspectives by illustrating how adaptive

¹³Philip Hallinger, "Science Mapping the Knowledge Base on Educational Leadership and Management from the Emerging Regions of Asia, Africa and Latin America, 1965 – 2018," *Educational Management Administration & Leadership*, 2019, <https://doi.org/10.1177/1741143218822772>.

¹⁴Kenneth Leithwood, Alma Harris, and David Hopkins, "Seven Strong Claims about Successful School Leadership Revisited," *School Leadership and Management* 40, no. 1 (2020): 5–22, <https://doi.org/10.1080/13632434.2019.1596077>.

¹⁵James P. Spillane and Melissa Ortiz, "Perspectiva Distribuida Del Distributed Perspective of Leadership and School Management: Crucial Elements and Implications," *Revista Eletrônica de Educação* 13, no. 1 (2019): 169–81, <https://doi.org/10.14244/198271993070>; James P. Spillane, *Distributed Leadership* (San Francisco: Jossey-Bass., 2006).

¹⁶Helen Janc Malone, *Leading Educational Change: Global Issues, Challenges, and Lessons on Whole-System Reform* (New York City, USA: Teachers College Press, 2013).

¹⁷Ronald Heifetz, Alexander Grahow, and Marty Linsky, *The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World*. (Boston: Harvard Business Press, 2009).

¹⁸Michael Fullan, Joanne Quinn, and Joanne McEachen, *Deep Learning: Engage the World Change the World* (Thousand Oaks, California: Corwin, n.d.).

leadership contributed to the long-term implementation of e-learning within the Islamic boarding school.

Strategic Resource Management for E-learning Implementation

Strategic resource management in this study demonstrates that digital transformation depends on the institution's ability to organize technological resources into an integrated educational system rather than merely expanding access to digital facilities. The availability of infrastructure, internet connectivity, technical support, and digital platforms functioned as complementary organizational resources that enabled e-learning to operate effectively across academic and administrative activities. Hallinger¹⁹ argues that sustainable educational improvement requires leaders to coordinate organizational resources through coherent management practices that align institutional capacity with strategic priorities. A similar view is presented by Bond et al.,²⁰ who emphasize that digital transformation becomes sustainable when technological resources are embedded within institutional systems that support teaching, learning, and organizational development rather than existing as isolated innovations. These findings indicate that resource management should be understood as an organizational capability that integrates infrastructure, technology, and institutional objectives into a unified digital ecosystem.

Reliable digital infrastructure became meaningful because it was supported by institutional efforts to improve accessibility and maintain the continuity of educational services. Internet connectivity, learning management systems, and digital learning facilities reduced barriers to communication and instructional delivery while enabling broader participation in academic activities. UNESCO²¹ characterizes digital infrastructure as a foundational condition for equitable and high-quality digital education, emphasizing that technological access must be accompanied by institutional support and sustainable governance. Complementing this perspective, OECD²² explains that educational institutions achieve stronger digital performance when investments in infrastructure are integrated with organizational planning and long-term digital strategies. The present findings reinforce these perspectives by illustrating how infrastructure development served institutional continuity rather than technological expansion alone.

Technical support represented a strategic organizational investment because it strengthened the institution's capacity to maintain digital learning beyond the initial stage of implementation. The combination of technical assistance, system maintenance, and continuous professional support enabled teachers and staff to respond more effectively to operational challenges encountered during e-learning implementation. The technological innovation in education becomes sustainable when institutions invest simultaneously in technical assistance and professional learning rather than focusing exclusively on digital equipment.²³ In a similar

¹⁹Philip Hallinger and Jasna Kovačević, "Science Mapping the Knowledge Base in Educational Leadership and Management : A Longitudinal Bibliometric Analysis , 1960 to 2018," *Educational Management Administration & Leadership* 49, no. 1 (2019), <https://doi.org/10.1177/1741143219859002>.

²⁰Melissa Bond et al., "Emergency Remote Teaching in Higher Education: Mapping the First Global Online Semester.," *International Journal of Educational Technology in Higher Education* 18, no. 1 (2021): 50, <https://doi.org/10.1186/s41239-021-00282-x>.

²¹UNESCO, "Global Education Monitoring Report 2023: Technology in Education: A Tool on Whose Terms?" (Paris, 2023), <https://www.unesco.org/en/articles/2023-global-education-monitoring-report-technology-education-tool-whose-terms>.

²²Stéphan Vincent-Lancrin, "OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem."

²³Ann Thérèse Arstorp, Anders D. Olofsson, and J. Ola Lindberg, "Professional Digital Competence in Teacher Education – Where Are We, Where Are We Headed and How to Get There?," *Teachers and Teaching: Theory and Practice* 30, no. 4 (2024): 395–99, <https://doi.org/10.1080/13540602.2024.2379845>; Jo Tondeur et al., "Preparing Preservice Teachers to Teach with Digital Technologies: An Update of Effective SQD-Strategies,"

direction, Shengnan and Hallinger demonstrate that leadership-supported organizational learning enhances schools' capacity to adopt and sustain educational innovation through collaborative professional development.²⁴ These findings suggest that technical support functions as an institutional mechanism for sustaining organizational learning during digital transformation.

The integration of digital platforms into teaching, communication, and academic administration reflects a shift from technology adoption toward organizational digital capability. Digital platforms became part of institutional routines that connected instructional processes, administrative coordination, and educational communication within a single operational environment. Bond et al.²⁵ argue that digital platforms generate greater educational value when they support institutional collaboration and organizational effectiveness rather than serving only instructional functions. OECD²⁶ likewise emphasizes that digital ecosystems become sustainable when platforms facilitate coordination, knowledge sharing, and evidence-based decision making across educational organizations. The present study extends these discussions by showing that platform integration within an Islamic boarding school strengthened institutional coordination while preserving the educational values that guided digital transformation.

Building Human Capacity for Digital Transformation

Human capacity development emerged as a strategic organizational investment because digital transformation relied on educators who could integrate technology into pedagogical practice while preserving the educational identity of the Islamic boarding school. Strengthening teachers' digital competence enabled the institution to translate technological resources into meaningful learning experiences rather than limiting digitalization to technical implementation. Tondeur et al.²⁷ explain that teachers' digital competence develops through continuous professional learning embedded in everyday instructional practice rather than through isolated training activities. In a complementary perspective, Falloon²⁸ argues that digital competence encompasses pedagogical judgment, instructional design, and the ability to adapt technology to diverse learning contexts. The present findings extend these perspectives by demonstrating that professional learning was closely connected to the institution's educational mission and religious values, allowing digital transformation to reinforce rather than replace its established pedagogical traditions.

Building human capacity also depended on collaborative learning that encouraged teachers, technical personnel, and school leaders to share responsibility for sustaining digital transformation. This collaborative approach created opportunities for continuous adaptation as digital technologies became increasingly integrated into instructional and organizational

Computers and Education 232, no. December 2024 (2025): 105262, <https://doi.org/10.1016/j.compedu.2025.105262>; Ilka Nagel and Synnøve Amdam, "Teachers' Professional Digital Competence," *Encyclopedia* 5 (September 15, 2025): 148, <https://doi.org/10.3390/encyclopedia5030148>.

²⁴Liu Shengnan and Philip Hallinger, "Unpacking the Effects of Culture on School Leadership and Teacher Learning in China," *Educational Management Administration and Leadership* 49, no. 2 (2021): 214–33, <https://doi.org/10.1177/1741143219896042>.

²⁵Bond et al., "Emergency Remote Teaching in Higher Education: Mapping the First Global Online Semester."

²⁶Stéphan Vincent-Lancrin, "OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem."

²⁷Tondeur et al., "Preparing Preservice Teachers to Teach with Digital Technologies: An Update of Effective SQD-Strategies."

²⁸Garry Falloon, "From Digital Literacy to Digital Competence: The Teacher Digital Competency (TDC) Framework," *Educational Technology Research and Development* 68, no. 5 (2020): 2449–72, <https://doi.org/10.1007/s11423-020-09767-4>.

practices. Trust, Carpenter, and Krutka²⁹ emphasize that professional collaboration strengthens teachers' ability to adopt digital innovation by fostering knowledge sharing, collective problem solving, and reflective practice. Likewise, OECD³⁰ highlights that educational organizations achieve sustainable digital transformation when professional learning communities support continuous capacity building across all institutional levels. The findings contribute to this discussion by showing that collaborative professional development within an Islamic boarding school strengthened organizational learning while maintaining the institution's distinctive educational culture throughout the digital transformation process.

Sustaining Digital Transformation Through Institutional Adaptation

Institutional adaptation emerged as a defining factor in sustaining digital transformation because long-term success depended on the school's capacity to respond to organizational, social, and environmental changes. Digital transformation became sustainable when institutional policies, community engagement, and organizational resilience evolved alongside technological advancement. OECD³¹ emphasizes that sustainable digital education requires educational institutions to develop adaptive governance capable of responding to changing technological, economic, and social conditions while maintaining educational quality. A similar perspective is presented by UNESCO,³² which argues that digital transformation should strengthen institutional resilience through inclusive policies, equitable access, and continuous organizational learning rather than focusing solely on technological expansion. The findings reinforce these perspectives by demonstrating that institutional adaptation enabled the Islamic boarding school to sustain digital transformation without compromising its educational mission or religious identity.

Community engagement also strengthened the institution's capacity to sustain digital transformation by extending organizational support beyond the school environment. Collaboration with parents and the local community reinforced digital awareness, encouraged shared responsibility, and created conditions that supported students' participation in technology-enhanced learning. Epstein³³ explains that effective school, family, and community partnerships improve educational quality by establishing reciprocal relationships that strengthen student learning and institutional development. Likewise, Ainscow³⁴ maintains that sustainable educational improvement depends on collaborative networks capable of mobilizing community resources and promoting inclusive participation in school development. The present study expands these perspectives by showing that partnerships within an Islamic boarding school also functioned as a mechanism for maintaining educational values while supporting the continuity of digital transformation.

The sustainability of digital transformation ultimately reflected the institution's ability to integrate strategic planning, organizational learning, stakeholder collaboration, and continuous innovation into a coherent management process. Digital technologies became part of institutional development because leadership consistently aligned innovation with educational

²⁹Torrey Trust, Daniel G Krutka, and Jeffrey Paul Carpenter, "'Together We Are Better': Professional Learning Networks for Teachers," *Computers & Education* 102 (2016): 15–34, <https://doi.org/https://doi.org/10.1016/j.compedu.2016.06.007>.

³⁰Stéphan Vincent-Lancrin, "OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem."

³¹Stéphan Vincent-Lancrin.

³²UNESCO, "Global Education Monitoring Report 2023: Technology in Education: A Tool on Whose Terms?"

³³Joyce L. Epstein and Steven B. Sheldon, *School, Family, and Community Partnerships Preparing Educators and Improving Schools* (New York: Routledge, 2023).

³⁴Mel Ainscow, "Promoting Inclusion and Equity in Education: Lessons from International Experiences," *Nordic Journal of Studies in Educational Policy* 6, no. 1 (2020): 7–16, <https://doi.org/10.1080/20020317.2020.1729587>.

objectives and long-term organizational priorities. Fullan³⁵ argues that sustainable educational change is achieved when organizations cultivate continuous learning, collective responsibility, and improvement-oriented cultures rather than treating innovation as a short-term initiative. Complementing this view, Hargreaves and O'Connor³⁶ emphasize that collaborative professionalism strengthens institutional capacity to sustain educational innovation through shared expertise, trust, and continuous improvement. The findings contribute to this discussion by illustrating that digital transformation within an Islamic boarding school evolved into a sustainable institutional practice supported by adaptive leadership, organizational resilience, and collaborative learning.

CONCLUSION

Digital transformation in Islamic boarding schools should be understood as a process of organizational development rather than a technological transition. The contribution of this study lies in demonstrating that the sustainability of e-learning depends on the institution's capacity to integrate leadership, strategic resource management, human capacity development, and institutional adaptation into a coherent management process. This perspective shifts the focus of digital transformation from technology adoption toward organizational capability, where educational innovation becomes embedded in institutional routines, collective learning, and value-based governance. Such an understanding offers a broader lens for examining digital transformation in faith-based educational institutions operating within complex and evolving educational environments.

The study contributes to educational management by reinforcing the view that leadership for digital transformation extends beyond administrative responsibility and requires the orchestration of organizational resources, professional learning, and adaptive institutional governance. This integrated perspective provides a practical reference for school leaders seeking to design digital transformation strategies that remain responsive to technological change while preserving institutional identity and educational values. The findings also enrich current discussions on digital leadership by highlighting the importance of aligning strategic planning, organizational learning, and collaborative decision making as interconnected dimensions of sustainable educational change.

This study was conducted as a qualitative case study within a single Islamic boarding school, which limits the transferability of the findings to other educational settings with different organizational structures and socio-cultural contexts. Future studies could broaden this line of inquiry through comparative case studies involving multiple Islamic boarding schools, longitudinal research examining the evolution of digital transformation over time, or mixed-methods designs that explore the relationships among leadership practices, organizational capacity, and educational outcomes. Such investigations would provide a deeper understanding of how different institutional contexts shape the sustainability of digital transformation across diverse educational environments.

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