

Digital Leadership Competence and Technology Integration Effectiveness in Post-Pandemic Classroom Practices

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ABSTRACT: This study investigates how digital leadership competence shapes the effectiveness of technology integration in post-pandemic classroom practices at MA Darunnajah Trenggalek. A qualitative case study design was applied to explore leadership strategies, teacher practices, and student learning experiences. Participants included the principal, teachers, and students selected through purposive sampling. Data were collected through semi-structured interviews, classroom observations, and document analysis, then analyzed using thematic analysis involving coding, categorization, and interpretation. The findings show that digital leadership competence supports structured planning, continuous mentoring, and alignment between technology use and pedagogical goals. Teachers demonstrate increased confidence and creativity in integrating digital tools, leading to more interactive and student-centered learning environments. Technology integration is found to be effective when instructional design emphasizes engagement, collaboration, and meaningful learning activities. The study also reveals a dynamic relationship in which leadership competence strengthens teacher capacity, effective integration enhances student learning, and classroom feedback informs ongoing improvement. These findings highlight the importance of adaptive and sustained digital leadership in maintaining effective and responsive post-pandemic education.

Key words: Digital Leadership, Technology Integration, Classroom Practices, Post-Pandemic Learning.

Introduction

The post-pandemic educational landscape has accelerated the integration of digital technologies into classroom practices, reshaping how teaching and learning are designed and implemented. Schools are expected to operate within hybrid and technology-enhanced environments where digital tools support communication, content delivery, and assessment. This transformation requires not only access to technology but also leadership that is capable of guiding its meaningful use. Digital leadership competence becomes a central element in this context, as school leaders are responsible for setting direction, supporting teachers, and ensuring that technology contributes to learning effectiveness. Leadership competence involves the capacity to align technological initiatives with pedagogical goals, manage change processes, and foster a culture that embraces innovation. Studies indicate that leadership plays a critical role in determining how technology is adopted and sustained in educational settings, particularly in periods of rapid transformation (Dexter, 2018).

At MA Darunnajah Trenggalek, digital leadership practices influence how technology integration is implemented across classroom activities. The principal's role extends beyond administrative coordination into instructional guidance that supports teachers in adapting to digital environments. Leadership actions include facilitating professional development, providing access to digital tools, and encouraging reflective teaching practices. These actions shape how teachers perceive and utilize technology in their instructional design. The effectiveness of digital transformation depends on how leadership translates vision into practical strategies that can be implemented consistently. Research suggests that leadership competence in digital contexts enhances teachers' readiness to integrate technology and improves instructional quality (Sheninger, 2019).

Technology integration effectiveness depends on the alignment between digital tools and pedagogical objectives. The presence of technology alone does not guarantee meaningful learning outcomes. Teachers are required to design learning experiences that use digital platforms to promote interaction, collaboration, and critical thinking. Effective integration occurs when technology supports student-centered learning and enhances engagement. Leadership plays a significant role in ensuring that this alignment is achieved by guiding teachers in selecting appropriate tools and strategies. At MA Darunnajah Trenggalek, leadership decisions influence how teachers adopt digital tools and how these tools are integrated into lesson planning and classroom activities. Evidence shows that effective technology integration is closely related to leadership support and the availability of professional learning opportunities (Tondeur et al., 2017).

The role of teachers in technology integration reflects their ability to combine content knowledge, pedagogy, and digital competence. Teachers are expected to move beyond traditional instructional methods and adopt approaches that leverage digital tools for interactive learning. This shift requires continuous professional development and support from leadership. Leadership competence contributes to this process by creating an environment where teachers are encouraged to experiment, reflect, and improve their practices. Teachers who receive consistent support are more likely to develop confidence in using technology and to design innovative learning experiences. Research highlights that teacher competence in technology integration is significantly influenced by leadership practices that emphasize collaboration and professional growth (Voogt et al., 2013).

Student engagement is another important aspect of technology integration effectiveness. Digital tools offer opportunities for interactive learning through multimedia content, online discussions, and collaborative projects. Students are more likely to engage when learning activities are relevant, interactive, and aligned with their experiences. Leadership influences student engagement indirectly by shaping the instructional practices of teachers. When teachers design engaging learning activities supported by digital tools, students demonstrate higher levels of participation and motivation. Studies show that effective use of educational technology enhances

student engagement and contributes to improved learning outcomes (Bond et al., 2020).

The relationship between digital leadership competence and technology integration reflects a dynamic interaction within educational settings. Leadership influences teacher practices, teacher practices shape learning experiences, and student responses provide feedback that informs leadership strategies. This interaction forms a continuous cycle of improvement in which each element contributes to the effectiveness of the others. Leadership competence ensures that this cycle remains aligned with institutional goals and responsive to changing conditions. The effectiveness of digital learning environments depends on how well leadership, teaching practices, and student needs are integrated into a coherent system. Research indicates that such alignment is essential for sustaining innovation and improving educational outcomes in technology-rich environments (Petko, 2012).

Organizational culture also plays a significant role in supporting digital transformation. A culture that values collaboration, openness to change, and continuous learning enhances the effectiveness of technology integration. Leadership shapes this culture by promoting shared responsibility, encouraging innovation, and recognizing the efforts of teachers and students. At MA Darunnajah Trenggalek, leadership practices contribute to the development of a learning environment that supports experimentation and adaptation. Teachers are more likely to adopt digital strategies when they feel supported and valued. This cultural dimension strengthens the sustainability of digital practices and contributes to long-term improvement. Evidence suggests that positive school culture is closely linked to successful implementation of educational innovations (Ertmer & Ottenbreit-Leftwich, 2010).

The complexity of post-pandemic education requires leadership that is adaptive and responsive to emerging challenges. Leaders must navigate technological changes, diverse learning needs, and evolving expectations while maintaining a focus on instructional quality. Adaptive leadership involves flexibility, continuous learning, and the ability to respond to feedback from teachers and students. At MA Darunnajah Trenggalek, leadership practices reflect the need to balance innovation with stability in implementing digital strategies. This approach supports sustainable development and ensures that technology integration remains relevant to educational goals. The alignment between leadership competence, teacher practices, and student engagement becomes a key factor in achieving effective learning outcomes.

Based on this background, this study addresses the following research questions: how does digital leadership competence shape technology integration practices at MA Darunnajah Trenggalek; how does digital leadership competence influence the effectiveness of technology integration in classroom learning; and how are digital leadership competence and technology integration effectiveness interconnected in post-pandemic classroom practices?

Method

This study employs a qualitative case study design conducted at MA Darunnajah Trenggalek to explore digital leadership competence and its influence on technology integration in post-pandemic classroom practices. A qualitative approach enables an in-depth understanding of complex interactions among leadership, teaching practices, and learning experiences within a natural setting. The case study design focuses on a bounded system, allowing detailed examination of how leadership is enacted and how technology integration is experienced by participants in the school context. This design is suitable for capturing contextual dynamics and providing rich descriptions of educational practices (Stake, 1995).

Participants in this study include the principal, several teachers, and students selected through purposive sampling. The selection is based on their active involvement in digital learning implementation and their experience with technology-supported instruction. The principal contributes insights related to leadership strategies and decision-making processes, while teachers provide perspectives on instructional practices and challenges in integrating digital tools. Students are included to offer information about their learning experiences and engagement in technology-mediated classrooms. This combination of participants ensures diverse perspectives that support a comprehensive understanding of the research focus. Purposeful sampling allows the selection of information-rich participants who can provide meaningful insights into the phenomenon being studied (Etikan et al., 2016).

Data collection was carried out using multiple techniques to enhance depth and credibility. Semi-structured interviews were conducted to capture participants' perspectives on digital leadership practices, technology integration, and classroom experiences. The flexible nature of interviews allows participants to elaborate on relevant issues while maintaining alignment with research objectives. Classroom observations were conducted to examine how digital tools are integrated into teaching practices, including the use of learning platforms, multimedia resources, and interactive activities. Document analysis was also employed to review lesson plans, school policies, and digital learning guidelines, providing contextual information about formal practices and institutional expectations. The use of multiple data sources supports triangulation and strengthens the validity of the findings (Flick, 2018).

Data analysis followed a thematic approach involving several stages. The process began with data reduction, where relevant information from interviews, observations, and documents was organized and selected. Coding was conducted to identify significant patterns related to digital leadership competence, technology integration practices, and learning effectiveness. Codes were grouped into categories and developed into themes that represent recurring patterns across the data. Interpretation focused on explaining relationships among themes and linking them to the research questions. This analytical process allows for systematic examination while maintaining sensitivity to context and meaning (Vaismoradi et al., 2016).

Results and Discussion

1. Digital Leadership Competence and Technology Integration Practices

Digital leadership competence at MA Darunnajah Trenggalek is reflected in the principal's capacity to guide, support, and sustain the use of digital tools in classroom practices through structured and intentional strategies. Leadership is demonstrated through the development of clear plans that integrate technology into instructional design, ensuring that digital practices are aligned with curriculum objectives and student learning needs. The principal actively facilitates mentoring processes that support teachers in understanding how to use digital platforms effectively. Teachers report that consistent guidance and access to professional learning opportunities strengthen their confidence in using learning management systems, multimedia applications, and collaborative digital tools. This pattern indicates that leadership competence contributes to reducing uncertainty and increasing teachers' readiness to adopt technology in meaningful ways. Research shows that leadership support is a critical factor in shaping teachers' use of digital tools and improving instructional practices in technology-rich environments (Scherer et al., 2021).

The role of planning within digital leadership practices becomes evident in how technology integration is systematically organized. The principal ensures that digital initiatives are not implemented in isolation but are embedded within broader instructional goals. Teachers are encouraged to design lesson plans that incorporate digital tools in ways that enhance student engagement and understanding. This structured approach allows technology integration to move beyond technical use toward pedagogical application. Leadership competence is reflected in the ability to connect technological resources with instructional strategies that support learning outcomes. Studies highlight that effective digital leadership involves strategic planning that aligns technology use with educational objectives and classroom needs (Leithwood et al., 2020).

Mentoring and professional support play a central role in strengthening teachers' capacity to integrate technology. The principal organizes training sessions, workshops, and informal discussions that allow teachers to develop digital skills and share experiences. These activities create opportunities for collaborative learning, where teachers exchange ideas and reflect on their practices. Teachers describe how peer interaction and leadership feedback contribute to the refinement of their instructional approaches. This collaborative environment supports continuous improvement and encourages teachers to adopt innovative strategies. Evidence suggests that professional learning supported by leadership enhances teachers' competence and confidence in using digital technologies (Philipsen et al., 2019).

Leadership practices also encourage experimentation and flexibility in teaching. Teachers are given space to explore new digital tools and adapt them according to classroom conditions. This approach fosters a sense of autonomy while maintaining alignment with institutional goals. Teachers experiment with various platforms, including interactive quizzes, video-based instruction, and online collaboration tools, to

create engaging learning experiences. Leadership support reduces the fear of failure and promotes a culture where experimentation is viewed as part of professional growth. This environment contributes to the development of innovative teaching practices that respond to student needs. Research indicates that leadership that promotes autonomy and innovation supports effective technology integration and enhances teaching quality (Kong et al., 2021).

The use of collaborative discussions further strengthens technology integration practices within the school. Regular meetings and reflective sessions allow teachers to evaluate the effectiveness of digital tools and identify areas for improvement. These discussions create a shared understanding of best practices and support the development of collective expertise. Leadership facilitates these interactions by providing time, structure, and guidance for professional dialogue. Teachers benefit from the exchange of experiences, which helps them refine their approaches and adapt to changing learning conditions. Collaborative practices supported by leadership contribute to the sustainability of digital innovation in education (Trust & Whalen, 2020).

Technology integration practices at MA Darunnajah Trenggalek become more structured and purposeful as a result of leadership guidance. Teachers demonstrate the ability to select appropriate digital tools, design interactive activities, and evaluate learning outcomes. The integration of technology is not limited to enhancing presentation but extends to promoting student participation and critical thinking. Leadership competence ensures that these practices are aligned with instructional goals and supported by institutional resources. This alignment strengthens the effectiveness of technology integration and contributes to improved learning experiences. Studies show that purposeful technology integration supported by leadership leads to more effective and engaging classroom practices (Howard et al., 2021).

The findings also reveal that leadership competence contributes to the development of a supportive institutional environment. Policies, guidelines, and resource allocation are aligned with digital learning objectives, providing a foundation for consistent implementation. Teachers are able to access necessary tools and receive support in overcoming challenges related to technology use. Leadership ensures that digital initiatives are sustainable by integrating them into institutional planning and evaluation processes. This structural support enhances the stability of technology integration practices and supports long-term development.

The relationship between digital leadership competence and technology integration practices reflects an interaction between strategic direction, professional support, and collaborative learning. Leadership provides the vision and resources, while teachers implement and refine practices through continuous engagement and reflection. This interaction creates a system that supports innovation and responsiveness to change. Technology integration becomes an integral part of instructional practice rather than an external addition.

These findings demonstrate that digital leadership competence plays a central role in shaping technology integration practices at MA Darunnajah Trenggalek. Leadership practices that emphasize planning, mentoring, and collaboration create conditions that enable teachers to use digital tools effectively. The integration of technology into classroom practices reflects the success of leadership in fostering a culture of innovation and continuous improvement. This relationship highlights the importance of leadership in ensuring that technology integration contributes to meaningful learning outcomes in post-pandemic education.

2. Digital Leadership Competence and Technology Integration Effectiveness

The effectiveness of technology integration at MA Darunnajah Trenggalek is closely related to how teachers design and implement digital learning activities within the classroom. Observational data indicate that classrooms characterized by interactive use of digital tools demonstrate higher levels of student participation, engagement, and responsiveness. Teachers employ a range of digital resources such as instructional videos, interactive quizzes, and collaborative platforms to support varied learning experiences. These practices enable students to interact with content, engage with peers, and participate actively in learning processes. Technology integration becomes effective when it is embedded within pedagogical strategies that promote meaningful learning rather than serving as an additional instructional element. Research indicates that effective integration depends on the alignment between technological tools and instructional design that supports active learning (Harris et al., 2016).

Teachers at MA Darunnajah Trenggalek demonstrate the ability to design digital learning activities that combine content delivery with interaction and engagement. Digital tools are used to facilitate discussion, provide immediate feedback, and support collaborative learning. These practices contribute to the development of a dynamic learning environment where students are encouraged to participate actively. The effectiveness of these strategies is reflected in students' willingness to engage in tasks, respond to questions, and contribute to discussions. Technology integration supports differentiated instruction by allowing teachers to adapt materials to diverse student needs. Studies show that interactive and student-centered use of technology enhances both engagement and learning outcomes in classroom settings (Sung et al., 2016).

Digital leadership competence plays a central role in ensuring that technology integration aligns with pedagogical objectives. The principal provides direction that emphasizes the importance of using technology to support learning goals rather than focusing solely on technical aspects. Teachers receive guidance on how to integrate digital tools in ways that enhance understanding and promote higher-order thinking skills. Leadership practices include providing feedback, facilitating professional development, and encouraging reflective teaching. These actions help teachers refine their instructional strategies and improve the effectiveness of technology integration. Evidence suggests that leadership support is essential for maintaining alignment between technology use and educational objectives (Blau & Shamir-Inbal, 2017).

Feedback mechanisms established by leadership contribute to continuous improvement in teaching practices. Teachers receive input on their use of digital tools, which allows them to identify strengths and areas for development. This process encourages reflection and supports the refinement of instructional strategies. Teachers adjust their approaches based on student responses and feedback, leading to more effective learning experiences. Leadership competence is reflected in the ability to create a system where feedback is used constructively to enhance teaching quality. Research highlights that reflective practice supported by leadership improves the effectiveness of technology integration and contributes to better learning outcomes (Admiraal et al., 2021).

Student responses provide important indicators of the effectiveness of technology integration. Students demonstrate increased motivation and engagement when learning activities are interactive and relevant to their experiences. Digital tools enable students to access diverse resources, collaborate with peers, and receive immediate feedback on their performance. These features support deeper understanding and encourage active participation. The positive response of students suggests that technology integration contributes to the development of meaningful learning experiences. Studies indicate that student engagement is significantly enhanced when digital tools are used to support interaction and collaboration (Schindler et al., 2017).

The role of leadership in sustaining effective technology integration is evident in the creation of supportive learning environments. Leadership ensures that teachers have access to necessary resources, training, and institutional support. This support enables teachers to implement digital strategies consistently and effectively. Leadership also promotes a culture that values innovation and continuous improvement, encouraging teachers to explore new approaches and adapt to changing conditions. This environment supports the sustainability of effective technology integration practices. Research shows that leadership that fosters supportive environments enhances the long-term success of digital initiatives in education (Dexter & Richardson, 2020).

The alignment between leadership, teaching practices, and student outcomes forms the foundation of technology integration effectiveness. Leadership provides direction and support, teachers implement strategies that utilize digital tools, and students respond through engagement and participation. This alignment ensures that technology integration contributes to meaningful learning outcomes. The effectiveness of this process depends on the ability of leadership to maintain coherence among these elements and to respond to feedback from classroom practices. Studies emphasize that alignment among leadership, pedagogy, and technology is essential for achieving effective digital learning environments (Koehler et al., 2014).

The findings demonstrate that digital leadership competence significantly influences the effectiveness of technology integration at MA Darunnajah Trenggalek. Leadership practices that emphasize alignment, feedback, and support enable teachers

to design and implement effective digital learning activities. Students benefit from interactive and engaging learning experiences that enhance participation and understanding. The relationship between leadership competence and technology integration effectiveness reflects a continuous process of improvement supported by collaboration, reflection, and adaptation.

3. Interconnection Between Leadership Competence and Integration Effectiveness

The relationship between digital leadership competence and technology integration effectiveness at MA Darunnajah Trenggalek reflects a continuous and interconnected process in which leadership actions, teacher practices, and student experiences mutually reinforce one another. Leadership competence provides direction and establishes expectations that shape how technology is used in instructional settings. Teachers interpret this direction through the design and implementation of digital learning activities, while students respond through their levels of engagement and participation. These responses generate feedback that informs leadership decisions and supports further refinement of strategies. This interaction illustrates that technology integration effectiveness is not achieved through isolated actions but through sustained alignment among leadership, teaching, and learning processes. Research indicates that leadership plays a pivotal role in orchestrating such alignment by connecting organizational vision with classroom practices (Hallinger & Heck, 2010).

The effectiveness of this interconnected process depends on how leadership vision is translated into practical and observable instructional strategies. At MA Darunnajah Trenggalek, the principal articulates expectations that emphasize meaningful use of technology in supporting learning outcomes. This vision is operationalized through professional development, mentoring, and collaborative planning, enabling teachers to integrate digital tools into their instructional design. Teachers align their practices with leadership expectations by designing activities that encourage interaction, collaboration, and critical thinking. Students engage with these activities, demonstrating how leadership vision influences learning experiences. Alignment among these elements ensures coherence in instructional practices and strengthens the effectiveness of technology integration. Studies suggest that alignment between leadership goals and classroom implementation enhances both teacher performance and student learning outcomes (Leithwood et al., 2020).

Leadership competence also functions as a mechanism for sustaining continuous improvement in technology integration. The principal establishes structures for monitoring and evaluation that allow for regular assessment of teaching practices and learning outcomes. Feedback from classroom activities provides insights into the effectiveness of digital strategies and highlights areas that require adjustment. Teachers use this feedback to refine their instructional approaches, while leadership uses it to adjust policies, provide targeted support, and strengthen professional learning opportunities. This feedback loop creates a dynamic process of reflection and adaptation that supports ongoing improvement. Evidence shows that feedback-driven

leadership contributes to organizational learning and enhances the effectiveness of educational innovations (Robinson et al., 2008).

Teacher capacity development is closely linked to the interaction between leadership competence and technology integration effectiveness. Leadership practices that emphasize mentoring, collaboration, and professional learning enable teachers to build confidence and competence in using digital tools. Teachers who receive consistent support are more likely to experiment with new strategies and adapt them to student needs. This process strengthens their ability to design effective learning experiences and contributes to the overall quality of instruction. The relationship between leadership and teacher capacity reflects a reciprocal process in which support and practice reinforce each other. Research highlights that leadership that prioritizes professional growth enhances teachers' ability to implement innovative instructional practices (Darling-Hammond et al., 2017).

Student learning outcomes serve as an important indicator of the effectiveness of this interconnected process. Students demonstrate increased engagement, participation, and understanding when technology integration is aligned with instructional goals. Interactive digital activities, collaborative tasks, and immediate feedback contribute to more meaningful learning experiences. These outcomes reflect the success of leadership and teaching practices in creating environments that support active learning. Student responses provide valuable information that informs both teaching strategies and leadership decisions. Studies indicate that effective integration of technology supported by leadership leads to improved student outcomes and deeper learning (Tamim et al., 2011).

The development of a collaborative culture further strengthens the relationship between leadership competence and integration effectiveness. Leadership fosters an environment where teachers share experiences, discuss challenges, and develop solutions collectively. This culture supports knowledge exchange and encourages continuous improvement in instructional practices. Teachers benefit from peer learning and collaborative reflection, which enhances their ability to integrate technology effectively. Leadership facilitates this culture by providing time, resources, and opportunities for professional interaction. Research suggests that collaborative cultures supported by leadership contribute to sustainable educational innovation and improved instructional quality (Harris, 2014).

Organizational structures also play a role in sustaining this interconnected process. Policies, guidelines, and resource allocation aligned with digital learning objectives provide a framework for consistent implementation. Leadership ensures that these structures support both flexibility and accountability, allowing teachers to innovate while maintaining alignment with institutional goals. These structures contribute to the stability and sustainability of technology integration practices. Teachers operate within a system that supports experimentation and continuous improvement, while leadership maintains oversight and direction. This balance

enhances the effectiveness of technology integration and supports long-term development.

The interaction between leadership competence and technology integration effectiveness reflects a dynamic system that evolves over time. Leadership provides the vision and support, teachers implement and refine practices, and students respond through engagement and learning outcomes. Feedback from this process informs continuous improvement, ensuring that practices remain relevant and effective. This system supports adaptability in response to changing educational contexts and technological advancements. Sustained leadership support ensures that technology integration becomes an integral part of instructional practice rather than a temporary initiative.

These findings demonstrate that the interconnection between digital leadership competence and technology integration effectiveness forms a foundation for effective post-pandemic education at MA Darunnajah Trenggalek. Leadership practices that emphasize alignment, feedback, and collaboration create conditions that support teacher development and enhance student learning experiences. The continuous interaction among leadership, teaching, and learning processes contributes to the development of an adaptive and responsive educational environment. This relationship highlights the importance of leadership in ensuring that technology integration is meaningful, sustainable, and aligned with educational goals.

Conclusion

Digital leadership competence at MA Darunnajah Trenggalek demonstrates a significant influence on the effectiveness of technology integration in post-pandemic classroom practices. Leadership that emphasizes planning, mentoring, and continuous support enables teachers to develop confidence in using digital tools and to design instructional strategies that are interactive and student-centered. Teachers respond to leadership guidance by integrating technology into learning activities that promote engagement, collaboration, and deeper understanding. The presence of structured leadership practices ensures that technology use is aligned with pedagogical objectives, creating learning environments that are meaningful and responsive to student needs. The findings indicate that leadership competence is not limited to technical management but extends to instructional guidance that shapes teaching quality and student learning experiences.

The relationship between digital leadership competence and technology integration effectiveness reflects an ongoing and interconnected process that requires alignment between leadership vision, instructional practices, and student outcomes. Leadership provides direction and support, teachers implement and refine digital strategies, and student responses generate feedback that informs continuous improvement. This cycle strengthens both teacher capacity and learning effectiveness, contributing to sustainable educational development. A collaborative culture supported by leadership enhances professional learning and encourages innovation in

instructional practices. The study highlights that effective digital transformation depends on leadership that is adaptive, reflective, and committed to continuous improvement. Strengthening digital leadership competence becomes essential for schools aiming to maintain effective technology integration and to respond to evolving educational demands in post-pandemic contexts.

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