Unlocking the Digital Realm: Exploring Perceptions and Practices in Educational Leadership

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ABSTRACT. This study explores the perceptions, attitudes, and understanding of digital leadership practices among school principals and teachers, focusing on their potential impact on school performance. A qualitative research approach was employed, using semi-structured interviews with school principals and teachers to collect in-depth data on their views and experiences. Thematic analysis was conducted to identify recurring themes related to the role of digital leadership in school management. Key findings highlight that digital leadership enhances school management quality through fostering a culture of innovation, embracing change, setting clear goals, and effectively utilizing technology. Specifically, participants emphasized the importance of digital leadership in promoting creative problem-solving, facilitating adaptability to evolving educational needs, and ensuring goal alignment with school improvement initiatives. Additionally, digital leaders' ability to leverage technology for instructional and administrative tasks was crucial in supporting data-driven decision-making processes. The study concludes that digital leadership is pivotal in improving school performance by fostering innovation, adaptability, and clear strategic direction while emphasizing the importance of technological competence. These findings offer significant implications for educational management, advocating for leadership models that prioritize digital capabilities to meet the demands of modern education.

Keywords: *Digital leadership, educational innovation, school management*

INTRODUCTION

In today's rapidly evolving educational landscape, the fusion of technology and leadership is paramount (Spencer et al., 2012; Au-Yong-Oliveira et al., 2018; Richardson & Sterrett, 2018; Chang, 2019; Mazurkiewicz, 2021; Abbas, 2024). The digital era's rapid technological advancements have significantly transformed the educational landscape, influencing how we live, work, and learn (Cobo, 2013; Selwyn & Facer, 2014; Gadzaova et al., 2021; Wider et al., 2024). Digital technology has become an integral part of our daily lives (Selwyn, 2003; Iivari et al., 2020; Haleem et al., 2022), facilitating and accelerating access to information and providing many conveniences in various activities, including those in the field of education (Coccoli et al., 2014; Sugianto, 2014; Modgil et al., 2022).

The transformative impact of digital technology is evident in educational practices, particularly in how teaching and learning occur. The prevalence of the internet and electronic devices such as computers, laptops, tablets, and smartphones has enhanced accessibility to information, fostering creativity and productivity among students and teachers(Supardi & Hasanah,

2020). The rise of distance learning and e-learning platforms illustrates this shift, allowing virtual interaction and continued engagement(König et al., 2020). Digital technologies such as video conferencing applications, e-learning platforms, and digital learning materials allow students and teachers to remain connected and interact virtually (Muhdi et al., 2020). Furthermore, digital technology also enables the development of more innovative and interactive learning methods (Udiyana et al., 2018). Moreover, innovative learning methodologies, such as gamification, blended learning, and flipped classrooms, have emerged as effective strategies to enhance student motivation and learning outcomes(Hasanah et al., 2022; Nja et al., 2022).

Various technological advancements that can be utilized in the learning process create new consequences for teachers and school principals (Priyambodo & Hasanah, 2021). In a technology-based learning environment, teachers must have sufficient skills and knowledge to operate the technology so students can learn effectively (Jie & Sunze, 2023; Zhao et al., 2021). Meanwhile, school leaders must face new challenges in managing and leading schools in a technology-based learning environment. They must ensure that the school has adequate technological infrastructure and innovate and adapt teaching strategies based on technology (Wicagsono, 2022). School leaders must also ensure that teachers have sufficient skills and knowledge to operate the technology so that the teaching process can run smoothly. In facing the challenges of the digital era, school leaders must also consider students' social and emotional aspects (Metsing et al., 2018), such as managing stress and anxiety that arise from distance learning and supporting students and parents in facing these changes.

School leaders are important in developing education (Ali & Hasanah, 2021). In the advanced digital era like today, school leaders must be able to lead by understanding and applying digital technology in sustainable school development strategies. School leaders' clear vision about using digital technology can bring many benefits to the school (Sudrajat et al., 2020). School leaders with a clear vision of digital technology can guide the appropriate and effective use of technology in teaching and school administration (Ilomäki & Lakkala, 2018). Thus, digital technology can improve efficiency, productivity, and the quality of teaching in schools.

In the context of increasingly complex digital technology, school leaders must also keep up with the latest technological developments and ensure that schools can keep up with these changes. However, while existing literature demonstrates the benefits of digital technology in enhancing educational quality (Mazurkiewicz, 2021; Sudrajat et al., 2020), there remains a gap in understanding how school leaders face the challenges and opportunities that arise in implementing digital leadership. Therefore, research on school leaders' challenges and opportunities in leading schools with a digital vision is critical. This study addresses the gap by examining the perceptions, attitudes, and understanding of digital leadership practices among school principals and teachers. The insights gained from this research will offer valuable guidance for educational practitioners and policymakers in effectively supporting school leaders in leveraging technology. The research is guided by How school principals and teachers perceive, understand, and approach digital leadership practices.

METHOD

This study employs an exploratory qualitative method, which is well-suited for understanding the perceptions, attitudes, and comprehension of digital leadership practices among school principals and teachers. This approach is particularly useful in contexts where little is known about a phenomenon, as it allows for developing rich, contextual insights (Merriam, 2009). The research conducted at Muhammadiyah School in Yogyakarta aims to explore digital leadership in the school environment. Interviews were conducted with 3 principals, 6 teachers, and 3 administrative staff members, alongside observations of activities related to implementing digital technology in both learning and school management. The findings are expected to provide a clearer

understanding of how digital leadership can enhance the quality of education and school management.

Several strategies were employed to ensure the validity and reliability of the results. Data triangulation strengthened internal validity, where interview findings were corroborated with observational data. External validity was addressed by offering detailed descriptions of the context and participants, allowing the findings to be transferable to similar settings. Credibility was enhanced by allowing participants to review and give feedback on the findings, ensuring their perspectives were accurately represented. Dependability was achieved through a systematic data analysis process, following the qualitative steps outlined by Creswell (2013), which include data reduction, data display, data verification, and conclusion drawing. The researcher organized and filtered the data for clarity and depth during data reduction. Information was arranged in tables, diagrams, or narratives in the data display stage to facilitate analysis. Data verification involved checking the accuracy of the data through methods such as triangulation and participant feedback. Finally, the data was interpreted and synthesized in the conclusion-drawing stage to answer the research questions.

RESULT AND DISCUSSION

Result

The thematic analysis of participants' views, feelings, and understanding of digital leadership practices reveals key elements that can significantly influence school performance. These findings are organized around the core themes identified in response to our research questions, as illustrated in Figure 1 below:
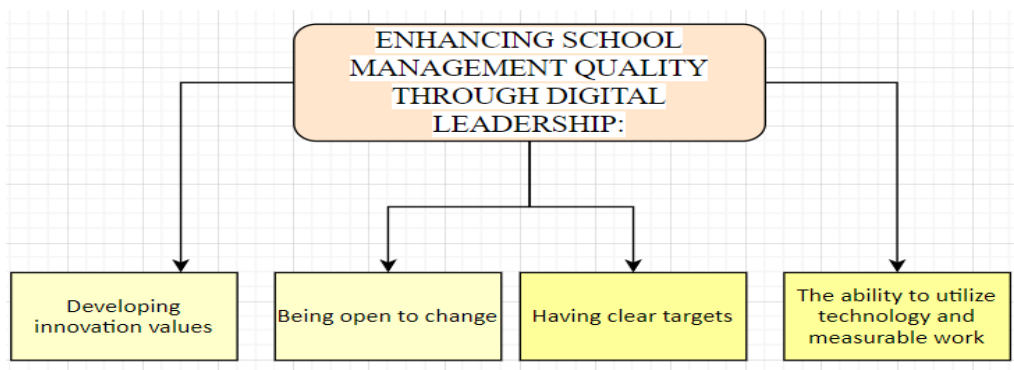

Figure 1. Digital leadership in improving management quality

Figure 1 illustrates that digital leadership is a crucial aspect of improving school performance, which can be implemented through several key strategies: a) developing innovation values, b) being open to change, c) having clear targets, and d) possessing the ability to utilize technology and measurable work. Each of these strategies is explained in detail below.

Developing Innovation Values

One effective way to implement digital leadership in education is by fostering innovation in organizational management. A relevant statement from one participant highlights this: *"One of the crucial avenues for advancing digital leadership within the education sector lies in fostering a culture of innovation through the development of novel organizational management strategies"* (Participant 1, lines 43-46). Another participant reinforced this notion: *"In our school, we have already utilized data analytics to gather insights on student performance, teacher effectiveness, resource allocation, and administrative operations. The school principal uses these insights to make informed decisions that enhance the overall effectiveness of the organization"* (Participant 2, lines 37-41). One participant emphasized the importance of innovation in effective digital leadership, stating, *"It is crucial for educational leaders, including school principals, to prioritize the needs and*

experiences of students, educators, and other stakeholders when implementing innovation in education. By placing these individuals at the center of innovation efforts, schools can drive meaningful and impactful changes" (Participant 5, lines 59-63).

Being Open to Change

Participants believe that digital leadership extends beyond the effective and efficient use of information and communication technology in organizational management; it encompasses a mindset and paradigm shift in leadership practices. Effective digital leadership embodies an open, disciplined approach that is adaptive to technological advancements and focused on clear objectives. Furthermore, digital leaders must guide integrating digital tools in schools to enhance organizational effectiveness and efficiency. Digital leadership entails leveraging information and communication technology to improve organizational performance and understanding the changes and innovations these technologies can bring. For instance, digital leadership can transform the traditional perspective of passive learning into an active, technology-driven learning environment. Thus, digital leadership involves the adept use of technology and a fundamental shift in educators' learning paradigms.

Having Clear Targets

Clear targets are fundamental to digital leadership, encapsulating the core principle of purpose-driven direction in navigating the complexities of the digital landscape. In this context, clarity of objectives acts as a guiding beacon, steering efforts toward meaningful outcomes in an ever-evolving technological environment. Defined targets provide direction and foster alignment, coherence, and accountability within the organization. They empower leaders to articulate a compelling vision, effectively mobilize resources, and chart a strategic course of action that resonates with stakeholders. Clear targets serve as catalysts for innovation, driving initiatives that harness the transformative potential of technology to achieve desired results. Additionally, they promote agility and adaptability, allowing leaders to recalibrate strategies in response to changing circumstances while remaining focused on organizational objectives. In essence, clear targets embody the essence of digital leadership by anchoring it in purposeful intent and propelling it toward impactful outcomes in the digital age. One participant emphasized this perspective: *"Effective digital leadership requires clear goal setting as its primary foundation. This reflects the core principle of digital leadership, which is to provide goal-centered direction in navigating the complexity of the digital landscape"* (Participant 3, lines 77-79).

The Ability to Utilize Technology and Measurable Work

Participants highlighted that an important aspect of digital leadership in schools is the emphasis on measurable work. It is made possible by the digital nature of tasks, which ensures that all activities are well-documented and easily monitored. As a result, digital leadership facilitates a work environment where performance and outcomes can be readily measured, allowing for greater accountability and effectiveness in school management.

Discussion

Developing innovation values in digital leadership is imperative for effectively navigating the rapidly evolving landscape of technology and business (Claassen et al., 2023; Behie et al., 2023; Trieu et al., 2024; Díaz-Arancibia et al., 2024). Leaders must foster a culture prioritizing creativity, adaptability, and forward-thinking strategies in today's digital age. This cultural shift involves encouraging experimentation and viewing failure not as a setback but as a valuable stepping stone toward success. By promoting a collaborative environment that values diverse perspectives, leaders can harness the collective intelligence of their teams (Khurniawan et al., 2021). Instilling these innovation values is crucial for digital leaders as it empowers their teams to push boundaries, explore new ideas, and drive meaningful change. Such an environment cultivates a sense of

ownership and engagement among team members, motivating them to contribute actively to the organization's objectives. As a result, organizations are better positioned to thrive in an increasingly competitive market (Salmela et al., 2022). By embracing innovation as a core value, digital leaders enhance their organizational capabilities and create a sustainable framework for continuous improvement and growth in the face of ongoing technological advancements.

In today's dynamic environment, where technological advancements occur rapidly, and market demands constantly shift, fostering a culture of innovation is essential for staying ahead of the curve. Educational digital leaders must cultivate a mindset that embraces change, encourages creativity, and promotes continuous learning among teachers and students. Leaders can inspire their teams to explore new ideas, experiment with emerging technologies, and adapt to evolving trends by instilling innovation values within educational institutions. This proactive approach drives institutional growth and competitiveness and enables organizations to effectively respond to challenges and capitalize on opportunities in the digital age. The importance of developing innovation values in educational digital leadership cannot be overstated. As highlighted by Fullan and Langworthy (2014), effective digital leadership involves integrating technology into educational practices and instilling values that promote creativity, critical thinking, and adaptability. By nurturing these innovation values, educational institutions can better prepare learners for the challenges and opportunities of the digital age, equipping them with essential skills for success in an ever-changing world. Ultimately, these values serve as a guiding force for educational leaders to navigate complexity, drive transformation, and unlock new pathways to success, ensuring that both educators and students are well-prepared to thrive in an increasingly complex technological landscape (Agustriyana & Setyadi, 2021; Myers, 2021).

Being open to change is a fundamental aspect of digital leadership, necessitating a shift in mindset towards embracing technological advancements and adapting to evolving digital landscapes. It involves recognizing that technology is not merely a tool but a catalyst for change, revolutionizing traditional operational methods and opening new avenues for innovation. Digital leaders must be willing to challenge existing norms and adopt novel approaches enabled by digital tools. This openness is particularly crucial in the educational sector, where leaders are pivotal in integrating technology into teaching and learning practices (Ellitan, 2020). The transition from passive learning models to active, technology-driven methodologies enhances student engagement and improves learning outcomes. Ultimately, embracing change within digital leadership reflects a forward-thinking mindset that fosters adaptability, leverages technology for organizational success, and promotes educational advancement (Isnawan & Sudirman, 2022; Zulkifly et al., 2023; Amalia & Hasanah, 2023). This approach demands continuous learning, flexibility, and a commitment to exploring new possibilities in the digital age (Payton, 2020). By fostering an environment receptive to change, digital leaders can effectively navigate the complexities of modern education and business, ensuring their organizations remain competitive and relevant.

Participant 3 highlights the pivotal role of clear goal setting in effective digital leadership, asserting that it is the fundamental foundation for this leadership style. This perspective aligns with the core principle of digital leadership, which emphasizes the importance of providing goal-centered direction to navigate the complexities of the digital landscape (Fleischmann et al., 2018). Clear goals guide individuals and organizations and foster alignment and accountability, enabling leaders to mobilize resources effectively and drive strategic initiatives (Bolton et al., 2018; Tsatsou, 2020). By articulating specific, measurable objectives, digital leaders can create a focused framework that empowers teams to achieve meaningful outcomes, ultimately enhancing organizational performance in an increasingly competitive environment. The significance of clear goal setting thus cannot be overstated, as it serves as a guiding force that facilitates the successful implementation of digital strategies and fosters a culture of innovation and responsiveness within organizations.

Participants in this study underscored the importance of measurability in digital leadership within educational institutions. They pointed out that the inherent nature of digital work, including

leadership tasks, facilitates thorough documentation and control, thus making measurement straightforward (Baptista et al., 2020; Richter, 2020; Selwyn, 2011; Klein & Schwanenberg, 2022; Teo et al., 2017; Mack et al., 2013). This measurability implies that in the context of digital leadership, tasks and outcomes can be quantified, enabling effective monitoring and evaluation of progress and success (Kim et al., 2020; Westein et al., 2023). By emphasizing measurable outcomes, digital leaders can establish benchmarks that guide their efforts and ensure organizational accountability.

Moreover, the ability to leverage technology effectively while maintaining a focus on measurable outcomes is crucial for digital leaders. These leaders must comprehensively understand technological advancements and how to integrate them to drive innovation, efficiency, and growth within their organizations. Staying informed about emerging technologies and anticipating their integration into existing frameworks is essential for achieving strategic objectives. Furthermore, by employing key performance indicators and metrics to assess progress, digital leaders can align their initiatives with organizational goals and optimize resource allocation to yield tangible results (Tandon et al., 2020).

Finally, the essence of digital leadership is rooted in the seamless integration of technology with measurable work, fostering a culture of continuous improvement and adaptability (Allwein, 2017). Digital leaders act as catalysts for change, advocating for adopting innovative technologies while establishing clear metrics to assess their effectiveness (Asbari, 2020). By promoting a culture of data-driven decision-making, digital leaders empower their teams to make informed choices and refine strategies based on real-time insights. This dynamic approach enhances organizational agility and fosters accountability, as progress is regularly evaluated against predefined benchmarks. Ultimately, the effective utilization of technology and measurable work forms the cornerstone of digital leadership, enabling organizations to thrive amid the complexities of a competitive digital landscape.

CONCLUSION

Digital leadership is not limited to technological expertise but includes a holistic approach that encourages innovation, adaptability, strategic planning and effective use of technology. By acting as catalysts for innovation, digital leaders encourage a culture of experimentation and creative problem-solving, improving the quality of education and creating dynamic learning environments. Their readiness to embrace change and navigate the ever-evolving educational paradigm positions them as important agents of transformation, ensuring that practices remain relevant and effective. In addition, digital leaders set clear targets and provide strategic direction, encouraging collaboration and shared goals among stakeholders. Most importantly, their proficiency in leveraging technology and data-driven decision-making optimizes teaching and administrative processes, improving overall efficiency. This research highlights the transformative potential of digital leadership, emphasizing its pivotal contribution to improving school management and shaping the future of education in an increasingly complex landscape. Further research should develop digital leadership skills among educators and administrators to drive educational excellence in the digital age.

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