



Research Article

The Role of the Madrasah Principal in Managing Education in the Digital Age

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The Role of the Madrasah Principal in Managing Education in the Digital Age

Abstract. Advances in digital technology have brought significant changes to the education system, including in madrasahs. This article aims to examine the role of madrasah principals in managing education in the digital age, covering aspects of leadership, management, teacher competency development, learning innovation, as well as the challenges and strategies faced. The method used is a literature review with a qualitative approach through content analysis of various sources. The results

of the study indicate that madrasah principals serve as visionary and transformational leaders in integrating technology, enhancing teacher competencies through training and supervision, and promoting digital learning innovations such as e-learning and blended learning. However, implementation still faces obstacles such as limited infrastructure, low digital literacy, and resistance to change. Therefore, strategies are needed through the strengthening of human resources, the provision of facilities and infrastructure, as well as the development of an adaptive digital culture grounded in Islamic values.

Keywords: Educational Management, Madrasah Principal, Digital Age

INTRODUCTION

Advances in digital technology have brought about significant changes in various aspects of life, including the field of education. This transformation requires educational institutions, particularly madrasahs, to adapt quickly to the use of information and communication technology in both the learning process and educational management. The digital age not only presents opportunities to improve the quality of education but also poses complex challenges for policymakers at the school level.¹

The principal of a madrasah is the leader of an educational institution who plays a crucial role in managing the learning process and the institution's development. As a student's second home, the madrasah is where they spend their time learning and growing. Therefore, the principal is responsible for ensuring that the entire educational process runs effectively and prepares students for life.

Madrasah principals are expected to possess strong leadership skills, particularly in managing various aspects of education. The effectiveness of their leadership is reflected in their ability to adapt and remain flexible in the face of change, especially in today's dynamic digital age. Madrasah principals are also expected to generate innovative and creative ideas so that various challenges can be transformed into opportunities to improve the quality of education.²

As leaders, madrasah principals, through their approaches, strategies, and innovations, have a significant influence on how character development is implemented in the madrasah. Therefore, madrasah principals are the ones who best understand the resources available at the educational institutions they lead. Furthermore, the madrasah principal has a broader role than that of a mere educator, as they are expected to be able to design strategies for creating an educational system that aligns with the National Education System and advancements in digital technology.³

¹ Arif Rahman dkk, *Peran Kepala Sekolah dalam Meningkatkan Mutu Pendidikan di Era Digital*, Edukasi Elita: Jurnal Inovasi Pendidikan, Vol.2 No.3 (2025), hal 206.

² Taufikurrahman, *Kepemimpinan Kepala Sekolah di Era Digital*, Seminar Nasional: Magister Manajemen Pendidikan Uniska MAB, Vol.1 No.1 (2021), hal 159-160.

³ Adi Wiyana dkk, *Kepemimpinan Kepala Sekolah Dalam Resiliensi Sekolah Di Era Digital*, Jurnal Manajemen Pendidikan, Vol.19 No.1 (2024), hal 170-171.

The digital age is driving a paradigm shift in education management, moving from conventional systems to technology-based systems. This includes the digitization of administrative processes, e-learning based instruction, and the use of various digital platforms in the educational process. Therefore, madrasah principals need to possess adequate digital literacy to manage these changes effectively and efficiently.

Leadership in madrasahs in the digital age is not only focused on managerial aspects but also on human resource development, particularly that of teachers. Teachers are expected to possess technology based pedagogical competencies, so madrasah principals must play an active role in providing ongoing training, mentoring, and supervision. This is essential to ensure that the learning process keeps pace with the times.⁴

In addition, madrasah principals also play a role in fostering a school culture that is adaptable to technology. A positive digital culture will encourage the entire madrasah community to be open to innovation and change. Thus, the digital transformation process is not only structural but also cultural, leading to an improvement in the overall quality of education. However, the implementation of digital based education in madrasahs still faces various challenges. Limited facilities and infrastructure, low digital literacy among teachers, and resistance to change are significant obstacles. In this situation, the role of the madrasah principal as a visionary leader is crucial in formulating the right strategies to overcome these various obstacles.⁵

The success of educational management in the digital age is greatly influenced by the leadership style of madrasah principals, with transformational and democratic leadership considered more effective in fostering innovation, collaboration, and the successful implementation of technology based educational programs.⁶ In addition, school principals also play a role in optimizing school based management integrated with digital technology through data driven planning, program implementation, and digital evaluation to improve the effectiveness and efficiency of educational management.⁷

From an Islamic educational perspective, the role of the madrasah principal also includes fostering students' character amid the growing tide of digitalization. Technological advancements can have both positive and negative impacts, necessitating leadership capable of balancing technological progress with Islamic

⁴ Dian Wahyuni dkk, Peran Kepala Sekolah dalam Optimalisasi Manajemen Berbasis Sekolah di Era Digital, *Jurnal Pendidikan Tambusai*, Vol.9 No.3 (2025), hal 39563.

⁵ M. Agus Kurniawan, Solehan, dan Dedi Lazwardi, *Kepemimpinan Pembelajaran Digital: Tantangan dan Strategi Kepala Sekolah di Era Modern*, AN NAJAH (*Jurnal Pendidikan Islam dan Sosial Keagamaan*), Vol.04 No.06 (2025), hal 71.

⁶ Rita Rosita dan Sofyan Iskandar, *Gaya Kepemimpinan Kepala Sekolah di Era Digital*, *Jurnal Basicedu*, Vol.6 No.4 (2022), hal 6006.

⁷ Dian Wahyuni dkk, *Peran Kepala Sekolah dalam Optimalisasi Manajemen Berbasis Sekolah di Era Digital*, hal 39567.

values. Consequently, madrasah principals face increasingly complex responsibilities in managing education in the digital age.⁸

Based on the above discussion, it can be concluded that the role of madrasah principals in managing education in the digital age is crucial and multifaceted. Therefore, this study aims to conduct an in depth examination of the role of madrasah principals in managing education in the digital age, covering aspects of leadership, management, teacher competency development, digital based learning innovations, as well as the challenges and strategies encountered in their implementation.

RESEARCH METHOD

The method employed in writing this scientific article is a literature review. Data was collected through an examination of relevant texts and research findings. The data was then analyzed qualitatively using content analysis. Based on the results of the analysis and interpretation of the data, conclusions were drawn, accompanied by recommendations. This scientific article employs a literature review by examining various scientific journals and books related to the role of madrasah principals in managing education in the digital age.⁹

RESULTS AND DISCUSSION

Leadership of Madrasah Principals in the Digital Age

The leadership of madrasah principals in the digital age has undergone significant transformation in tandem with the development of information and communication technology in the field of education. In line with the views of Rahmi et al., madrasah principals do not merely serve as administrators but also as visionary leaders capable of guiding educational institutions toward digital adaptation. This leadership requires the ability to formulate technology-based visions and integrate Islamic educational values with digital innovations. Visionary leadership is key to creating madrasahs that are competitive and adaptable to the changing times.¹⁰

Leadership by madrasah principals in the digital age also emphasizes the importance of transformational leadership. This style drives change through inspiration, motivation, and the empowerment of the entire madrasah community. Transformational leadership plays a significant role in improving the quality of Islamic education, particularly in strengthening technology-based learning and developing teacher competencies.¹¹ According to Prayuda et al., the concept of digital leadership emphasizes a leader's ability to leverage technology to enhance the effectiveness of communication, collaboration, and decision making. Madrasah principals must possess adequate digital literacy to serve as both role models and catalysts for transformation. Furthermore, the use of management information

⁸ Apri Eka Budiyo, Peran Kepemimpinan Kepala Sekolah Dalam Pendidikan Karakter Peserta Didik Di Era Digital, NUSRA: Jurnal Penelitian dan Ilmu Pendidikan, Vol.4 No.3 (2023), hal 760.

⁹ Abdul Fattah Nasution, Metode Penelitian Kualitatif, (Bandung: Harfa Creative, 2023), hal 13.

¹⁰ Elvi Rahmi, Moh. Muslim, Yusnia Binti Kholifah, *Kepemimpinan Visioner Kepala Madrasah Di Era Digital*, Jurnal EL-RUSYD, Vol.7 No.2 (2023), hal 44-45.

¹¹ Sulis Maryati, *Kepemimpinan Transformasional Kepala Madrasah dalam Meningkatkan Mutu Pendidikan Islam di Era Digital*, IQRO: Journal of Islamic Education, Vol.8 No.2 (2025), hal 913.

systems enables more accurate and timely data driven decision making, allowing madrasahs to respond to educational needs quickly and effectively.¹²

In the digital age, madrasah principals also serve as agents of change capable of building an innovative and collaborative educational ecosystem. This is achieved by strengthening networks with various external parties, such as technology providers and the global education community. Inclusive leadership creates opportunities for teachers and students to participate in formulating technology-based policies, thereby fostering a dynamic, creative, and relevant learning environment that keeps pace with the times.¹³ On the other hand, technological advancements must be balanced with the reinforcement of Islamic values and akhlakul karimah. The madrasah principal bears the responsibility of ensuring that the use of technology remains within ethical and moral boundaries and is capable of shaping students' character.¹⁴ Thus, the leadership of the madrasah principal in the digital age is a blend of adaptive, transformational, and visionary leadership one that is not only oriented toward technological advancement but also toward character development and spiritual values.

The Role of the Madrasah Principal as a Digital Education Manager

The role of the madrasah principal as an education manager in the digital age has become crucial in managing various aspects of technology-based education. According to Salmadi et al., digital transformation drives madrasah principals to optimize managerial functions such as planning, organizing, implementing, and evaluating using technology to ensure that educational processes run effectively and efficiently.¹⁵

During the planning stage, the madrasah principal is responsible for developing strategic programs based on the madrasah's digital needs. This includes procuring technological infrastructure, developing a digital based curriculum, and integrating information systems into educational management. Innovation in planning is a key factor in ensuring that the madrasah can keep pace with the times and continuously improve the quality of education.

Furthermore, in terms of organization, the madrasah principal plays a role in managing all resources, including teaching staff, support staff, and digital infrastructure. Human resource management is a key focus, including mapping the digital competencies of teachers and staff to prevent a digital divide. Clear division of tasks and strengthened team collaboration will support the creation of a work environment that is adaptable to technological developments.

¹² Rafie Zaidan Prayuda, *Kepemimpinan Digital Kepala Sekolah Pada Era Digital: A Mini Review Article*, International Journal of Social, Policy and Law (IJOSPL), Vol.03 No.01 (2022), hal 14.

¹³ Adi Wiyana dkk, *Kepemimpinan Kepala Sekolah Dalam Resiliensi Sekolah di Era Digital*, hal 170.

¹⁴ Kasno, *Leadership Strategy of Madrasah Principals in Student Character Education in The Digital Era*, Journal of Multicultural Education and Social Studies (JOMESS), Vol.01 No.2 (2024), hal 2.

¹⁵ Salmadi dkk, *Pengaruh Transformasi Digital terhadap Efektivitas Manajemen Kepala Sekolah*, Jurnal Pendidikan Tambusai, Vol.8 No.3 (2024), hal 47542.

During the execution phase, the madrasah principal is responsible for ensuring that digital based educational programs are effectively implemented. This includes the use of digital learning platforms, technology based administrative systems, and the management of online educational communication. The madrasah principal must also conduct regular monitoring to ensure that all programs align with established objectives.

The evaluation phase is a crucial component of digital education management. The madrasah principal must utilize digital data as the basis for evaluating educational programs and making informed decisions. Technology based evaluation enables more transparent, accountable, and sustainable educational management.¹⁶ Thus, the principal's role as a digital education manager is key to enhancing the effectiveness and quality of education in the digital age.

The Role of the Madrasah Principal in Enhancing Teacher Competence

The role of the madrasah principal in enhancing teacher competence holds strategic importance in the digital age, where teachers must not only master the subject matter but also be able to integrate technology into the learning process. The madrasah principal serves as a learning leader who guides, mentors, and ensures that teachers possess pedagogical, professional, social, and personal competencies aligned with contemporary developments.¹⁷ The enhancement of teacher competencies focuses on mastering educational technology, such as the use of Learning Management Systems (LMS), interactive learning media, and the utilization of various digital learning resources. In this regard, the madrasah principal acts as a facilitator who provides professional development programs in the form of training, workshops, and teacher learning communities. Such ongoing programs have proven effective in enhancing teachers' readiness to handle digital based learning.¹⁸

In addition, the madrasah principal serves as an academic supervisor who provides systematic guidance through instructional supervision activities. Supervision is not limited to conventional methods but can also leverage digital technology, such as online classroom observations and evaluations conducted via digital platforms. Through effective supervision, the madrasah principal can identify teachers' professional development needs and provide constructive feedback to improve the quality of instruction.¹⁹

Furthermore, madrasah principals need to foster a culture of collaboration within the madrasah. Collaboration among teachers through discussions, the sharing of best practices, and the development of professional learning communities are

¹⁶ Syamsiah Kurniawan, Lukman Hakim, dan Subki, *Supervisi Kepala Madrasah Dalam Meningkatkan Kompetensi Guru Madrasah Aliyah*, Jurnal Pendidikan: Riset dan Konseptual, Vol.8 No.4 (2024), hal 735.

¹⁷ Sri Yulia Sari dan Meira Dwi Indah Purnama, *Manajemen Kepala Madrasah Dalam Meningkatkan Kompetensi Guru*, Jurnal Mikraf: Jurnal Pendidikan, Vol.4 No.1 (2023), hal 39.

¹⁸ M. Agus Kurniawan, Solehan, dan Dedi Lazwardi, *Kepemimpinan Pembelajaran Digital: Tantangan dan Strategi Kepala Sekolah di Era Modern*, hal 70.

¹⁹ Syamsiah Kurniawan, Lukman Hakim, dan Subki, *Supervisi Kepala Madrasah Dalam Meningkatkan Kompetensi Guru Madrasah Aliyah*, hal 735.

effective strategies for continuously improving teacher competence. A collaborative work environment can also foster learning innovation and strengthen teachers' professionalism in addressing the challenges of digital education. On the other hand, school principals also play a role in providing ongoing motivation and support to teachers to ensure they remain adaptable to change. Such support can take the form of recognition, moral reinforcement, or facilitating professional development needs.²⁰ Thus, the role of the madrasah principal is not only as a leader of learning but also as a facilitator, supervisor, and motivator capable of fostering competent teachers who are ready to face educational challenges in the digital age.

Digital Based Learning Innovations in Madrasahs

Digital based learning innovations in madrasahs are a strategic step toward improving the quality of the teaching and learning process in the technological age. Madrasah principals play a crucial role in fostering various innovations through the use of information and communication technology as a learning medium. These innovations are not limited to the use of digital devices but also encompass changes in teaching methods, strategies, and approaches that are more interactive and student centered.²¹

One form of innovation emerging in madrasahs is the use of Learning Management Systems (LMS), interactive learning media, and digital applications that support both online and hybrid learning. The use of e-learning platforms enables more flexible interaction between teachers and students, free from the constraints of time and place. The use of digital media also helps improve the effectiveness of content delivery and simplifies the learning assessment process. Additionally, educational innovations include the implementation of technology-based learning models such as blended learning and the flipped classroom. These models provide students with the opportunity to learn independently through digital media before delving deeper into the material in class. This approach fosters self directed learning and enhances conceptual understanding more effectively.²²

The role of the madrasah principal in supporting this innovation is crucial, particularly in providing the necessary infrastructure, policies, and a conducive environment for the development of digital learning. The principal must also encourage teachers to continue innovating through training and professional development. Strong leadership support will enhance teachers' creativity in developing learning methods tailored to students' needs.²³

²⁰ Kasmi, Andi Bunyamin, dan Muhammad Syahrul, *Strategi Kepala Madrasah dalam Meningkatkan Kompetensi Guru di MTs Madaniyah Gunung Silanu Kabupaten Jenepono*, AL-QALAM: Jurnal Kajian Islam Dan Pendidikan, Vol.7 No.1 (2025), hal 374.

²¹ Mia Permata Sari dan Muhammad Sirozi, *Inovasi dalam Perencanaan Pengembangan Madrasah di Era Digital*, Jurnal Inovasi, Evaluasi, dan Pengembangan Pembelajaran (JIEPP), Vol.4 No.3 (2024), hal 452.

²² M. Agus Kurniawan, Solehan, dan Dedi Lazwardi, *Kepemimpinan Pembelajaran Digital: Tantangan dan Strategi Kepala Sekolah di Era Modern*, hal 70.

²³ Mia Permata Sari dan Muhammad Sirozi, *Inovasi dalam Perencanaan Pengembangan Madrasah di Era Digital*, hal 452.

However, the implementation of digital based learning innovations also faces various challenges, such as limited access to technology, teacher readiness, and differences in students' technological proficiency. Therefore, appropriate strategies are needed to ensure that innovations can be implemented optimally and inclusively. Thus, digital based learning innovations in madrasahs represent a vital effort in creating adaptive, creative, and technology relevant learning experiences.

Challenges and Strategies for Madrasah Principals in the Digital Age

Advances in digital technology have brought significant changes to the education system, directly impacting the management of madrasahs. Madrasah principals face various challenges, particularly limited technological resources and infrastructure, such as uneven internet access and the limited availability of digital devices. These conditions pose obstacles to the optimal implementation of digital based learning.²⁴

Teachers' limited digital literacy also poses a challenge in the implementation of technology-based education. Not all teachers are prepared to utilize technology as a learning medium, necessitating ongoing efforts to enhance their competencies. Furthermore, habits formed through conventional teaching methods influence their readiness to embrace change, meaning that digital transformation is also linked to cultural shifts within the madrasah environment. The ability of madrasah principals to manage change is a critical factor in navigating the dynamics of the digital age. Madrasah principals are expected to make swift, data driven decisions and steer policies aligned with technological advancements. On the other hand, Islamic values must remain the foundation of every policy to ensure education is not solely technology oriented but also focuses on the character development of students.²⁵

Strategic efforts that can be undertaken include enhancing teachers' digital competencies through training, mentoring, and continuous professional development. Collaboration with various stakeholders is also necessary to support the provision of digital facilities and infrastructure. Synergy between madrasahs, the government, and external parties can accelerate the process of technology based educational transformation. Strengthening a digital culture within the madrasah environment is a key factor in the successful implementation of educational innovations. Madrasah principals need to create an environment that is open to change, collaborative, and adaptive to technological developments. The use of educational management information systems can also improve the effectiveness of planning, implementation, and evaluation of programs in a more targeted manner.²⁶ With the right strategies, madrasahs can develop into innovative educational institutions that remain grounded in Islamic values.

²⁴ M. Agus Kurniawan, Solehan, dan Dedi Lazwardi, *Kepemimpinan Pembelajaran Digital: Tantangan dan Strategi Kepala Sekolah di Era Modern*, hal 71.

²⁵ Juwita Puspita Sari dkk, *Tantangan Madrasah Di Era Digital: Transformasi Pendidikan Agama Islam Dalam Konteks Teknologi*, Jurnal MUDARRISUNA: Media Kajian Pendidikan Agama Islam, Vol.14 No.2 (2024), 219-220.

²⁶ Kasno, *Leadership Strategy of Madrasah Principals in Student Character Education in The Digital Era*, hal 5.

CONCLUSION

The role of the madrasah principal in managing education in the digital age is crucial and multidimensional, encompassing the functions of a visionary leader, manager, facilitator, supervisor, and agent of change. Madrasah principals are expected to effectively integrate technology into educational management, enhance teacher competencies, and promote digital based learning innovations. Amid various challenges such as limited resources and low digital literacy, the success of educational transformation heavily depends on leadership that is adaptive, transformational, and grounded in Islamic values. Thus, the madrasah principal plays a key role in realizing quality education that is relevant to the times while remaining rooted in the character development of students.

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