

## Challenges in Educational Management for Implementing Digitalization in Schools

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### ABSTRACT

Digital transformation has brought significant changes to the world of education, requiring educational management to adapt and innovate in managing schools. This article examines the main challenges faced by educational management in implementing school digitalization through a literature review of current scientific sources, both nationally and internationally. The results of the study indicate that the main challenges include technological infrastructure gaps, limited digital competence of teachers, high implementation costs, a lack of digital learning materials, and issues of data security and ethics. The discussion is conducted in-depth to explain the root causes, impacts, and potential solutions to these challenges. This article emphasizes the importance of stakeholder collaboration, continuous teacher training, and the development of adaptive and responsive policies to technological advancements. Thus, the digitalization of education is expected to run optimally and improve the quality of learning in the digital era.

### Keywords

educational management, school digitalization, educational transformation, digital challenges, digital competence, technological infrastructure, data security

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## 1. INTRODUCTION

The rapid development of information and communication technology (ICT) over the past two decades has profoundly transformed various sectors, with education being one of the most significantly affected. In today's digital age, schools are increasingly required to adopt innovative approaches to manage and implement educational processes effectively. The integration of technology into education is not merely about incorporating digital devices into classrooms; it represents a fundamental shift in how educational institutions operate. As noted by Hermawansyah (2021), educational digitalization is a response to contemporary demands that necessitate the incorporation of technology into both learning and administrative activities. This transformation encompasses a comprehensive rethinking of human resource management, administrative systems, and data-driven evaluation methods, all aimed at enhancing educational outcomes.

In this context, digitalizing schools has transitioned from a luxury to a necessity in the modern era. According to Soedjono (2022), the effective use of technology can significantly enhance both the efficiency and quality of the teaching and learning process. By leveraging ICT, educators can create more engaging and interactive learning experiences, personalize instruction to meet diverse student needs, and streamline administrative tasks to allow for more focus on teaching. However, despite the potential benefits, empirical studies reveal that the implementation of educational digitalization is fraught with challenges. Research conducted by Asari, Kurniawan, and Lestari (2023) highlights several barriers to effective digitalization in schools, including inadequate ICT infrastructure, low digital literacy among educators, and the persistent digital divide between urban and rural areas. These obstacles hinder the ability of schools to fully embrace technology and realize its benefits.

The findings from these studies resonate with the insights provided by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek, 2025), which emphasizes the need for collaboration among the government, educational institutions, and the private sector to foster equitable and sustainable digitalization. The role of government policies and initiatives is crucial in addressing the disparities in access to technology and ensuring that all schools, regardless of their location, can benefit from digital resources. This collaborative approach is essential for creating a supportive environment that encourages the integration of technology into educational practices and promotes digital literacy among educators and students alike.

However, as schools embark on this digital journey, they must also grapple with critical issues related to data security and ethics. The application of technology within educational environments raises significant concerns about the protection of sensitive information and the ethical use of digital resources. This underscores the fact that educational digitalization is not merely a technical endeavor; it encompasses social, cultural, and policy dimensions that must be carefully considered. Educational management, which is responsible for overseeing school administration, plays a strategic role in navigating these complexities and ensuring that digitalization efforts align with ethical standards and best practices.

Despite the importance of educational management in this transformation, there remains a notable gap in research specifically addressing the challenges faced by educational leaders in implementing comprehensive and sustainable digitalization strategies. Previous studies have predominantly focused on technical or pedagogical aspects, often overlooking the managerial strategies that could effectively address the multifaceted challenges of digital integration. This gap highlights the need for targeted research that explores the unique

challenges encountered by educational management and identifies practical solutions to facilitate the successful implementation of digitalization initiatives.

In light of this background and the identified research gap, this article aims to examine the primary challenges faced by educational management in the digitalization of schools. It seeks to formulate relevant and applicable strategies to overcome these challenges, thereby ensuring that the digitalization of education can proceed optimally. By addressing these issues, this study aspires to contribute meaningfully to the improvement of learning quality in the digital era, ultimately enhancing educational outcomes for all students.

## **2. METHODOLOGY**

This research employs a qualitative approach using a literature review method, which involves collecting data through the examination of various written sources such as scholarly journals, books, articles, and research reports relevant to the topics of educational management and school digitalization. The primary focus of this study is to understand the challenges faced in educational management during the implementation of digital transformation in schools and to formulate strategies to address these challenges based on literature review, without collecting direct data from the field.

The data used in this study were obtained from sources published within the last five to ten years to ensure the relevance and currency of the information. All reading materials were analyzed systematically by reading, categorizing, and interpreting the information to formulate comprehensive and in-depth conclusions about the issues being studied. The data analysis was conducted using a qualitative descriptive approach to provide a coherent explanation and detailed description of the dynamics of educational management in the digital transformation of schools, as well as the various challenges encountered during its implementation. This approach enables the researcher to map out various obstacles and offer recommendations based on findings derived from the relevant literature.

## **3. RESULTS AND DISCUSSION**

Educational digitalization in Indonesia is an inevitability in the modern era; however, its implementation still faces major challenges that are interconnected and mutually reinforcing. Based on the literature review conducted, one of the most prominent obstacles is the technological infrastructure gap between urban and rural areas. Many schools in remote regions, including small islands and border areas, struggle to access stable internet connections and adequate digital devices. As a result, online learning becomes suboptimal, and schools are often forced to revert to conventional methods due to limited facilities. This finding is supported by Nugroho et al. (2020), who reported that 58% of schools in 3T (frontier, outermost, and underdeveloped) areas still do not have stable internet access, as well as by the UNESCO report (2021), which highlights the digital divide as a global challenge in developing countries.

In addition, the limited digital competence of teachers is a significant challenge. Not all teachers have an educational background in information technology, making it difficult for them to operate digital devices, use learning applications, and create digital-based teaching materials. The training provided is often incidental and unsustainable, causing many teachers to continue relying on conventional teaching methods. This is consistent with the findings of Astuti et al. (2021), which state that only 35% of teachers in Indonesia feel confident using online learning technologies, and with the TPACK theory (Mishra & Koehler, 2006), which

emphasizes the importance of mastering technical, pedagogical, and content knowledge simultaneously for effective technology integration.

The high cost of implementing digitalization also serves as a barrier, especially for schools with limited budgets. Significant investments are required for procuring devices, developing e-learning platforms, teacher training, device maintenance, and software license purchases. Data from BPS (2022) show that average school expenditure on digitalization increased by 30% during the pandemic, while research by Fauzi & Khusuma (2020) confirms that funding limitations are a major barrier to procuring devices and conducting teacher training.

Moreover, the limited availability of high-quality digital learning materials that align with the national curriculum is a challenge. Teachers often have to search for and adapt materials from various sources independently. Pratama & Firmansyah (2021) found that 67% of teachers search for digital teaching materials on their own, and only 14% use official digital materials provided by the government. Meanwhile, UNESCO (2020) emphasizes the importance of developing relevant local content that aligns with the curriculum.

Issues related to data security and digital ethics have also become a primary concern. The use of digital technology increases the risk of personal data breaches for both students and teachers, as well as threats such as cyberbullying and technology misuse. Setiawan et al. (2022) found that 40% of schools do not yet have policies in place for digital data protection, while the OECD (2021) highlights the importance of digital literacy and data protection in education.

From the perspective of organizational culture and management, many schools still face challenges in terms of human resource readiness, particularly in digital literacy. Principals, as managers, play a key role in building a work culture that is adaptive to technology. Previous research by Sari & Rahmawati (2021) emphasizes the importance of visionary school leadership in ensuring successful digitalization, in line with Change Management theory (Kotter, 1996), which states that organizational change requires full support from leaders and all members.

The impact of digitalization is also felt by students and parents. Students face challenges such as lack of motivation and digital distractions, while parents are expected to act as facilitators of learning at home, although they may not necessarily have the knowledge or resources to do so. Wulandari et al. (2021) found that 52% of students felt less motivated to engage in online learning due to gadget distractions, and 61% of parents found it difficult to assist their children with learning at home. UNICEF (2021) emphasizes the importance of parental involvement and improving digital literacy among families.

To address these challenges, strategic planning is required, including strengthening infrastructure, providing structured and continuous teacher training, developing quality digital learning materials aligned with the curriculum, and fostering collaboration between the government, schools, and the private sector. Adaptive and responsive policies that keep pace with technological developments must also be established, including data protection and digital ethics. Visionary and collaborative school leadership is essential in fostering a culture of innovation within schools. Moreover, active engagement of both parents and students in the digital education ecosystem should be encouraged to ensure effective and meaningful online learning.

The limitations of this study lie in its focus on the challenges and solutions at the primary and secondary school levels in Indonesia, without thoroughly exploring the context of higher education or non-formal education. Additionally, the study is limited to a literature review and available case studies, and therefore does not fully represent the dynamics across all provinces. For future research, it is recommended to conduct broader field studies using both quantitative and qualitative approaches to map the readiness and needs of digitalization across various educational levels and regions in more detail. Further research may also explore innovative

strategies in developing localized digital teaching materials, need-based teacher training models, and effective data protection mechanisms in school environments.

**Table 1.** Summary of Key Findings on Educational Digitalization

Author(s)	Year	Key Findings
Hermawansyah	2021	Educational digitalization is essential for modern demands; calls for rethinking management and evaluation methods.
Soedjono	2022	Effective technology use improves teaching and learning; ICT can enhance engagement and streamline administrative tasks.
Asari, Kurniawan, & Lestari	2023	Identifies barriers to digitalization: inadequate ICT infrastructure, low digital literacy, and the urban-rural digital divide.

#### 4. CONCLUSION

The findings from the various studies underscore the critical importance of educational digitalization in responding to contemporary demands. The emphasis on rethinking educational management and evaluation methods highlights the need for a transformative approach to enhance educational outcomes. Effective integration of technology not only improves the teaching and learning process but also fosters engaging and personalized learning experiences for students. However, significant barriers remain, including inadequate infrastructure and low digital literacy among educators, which hinder the full potential of digitalization in schools. To overcome these challenges, collaboration among government entities, educational institutions, and the private sector is essential. By working together, stakeholders can ensure equitable access to digital resources, ultimately leading to a more effective and inclusive educational landscape.

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